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Blazing A Trail In The Server, Storage & Networking Markets

Supermicro Focuses On Building Power-Efficient, Cost-Effective System Solutions With Top-Notch Customer Service

POISED FOR GROWTH. That's one way to describe server, storage, and networking manufacturer Supermicro. In what has proven to be a rather turbulent market lately, where plenty of manufacturers are reshaping and retooling to survive, San Jose, Calif.,-based Supermicro has its sights set on rapid growth.

"The server market is big and challenging," says Supermicro President and CEO Charles Liang. "Only the best survive, and we will not retreat in the short, mid, or long term."

In a market where every company has its strengths, Liang says, Supermicro works to offer the best computing solutions in terms of performance per watt, per dollar. Supermicro's strength is in building the most power-efficient systems in the most cost-effective and environmentally caring manner, Liang says. "Mother Earth deserves the most green solutions and the least net pollution."

Not Just Another Manufacturer

Buying servers, storage, and networking equipment used to be simpler. But in today's fast-paced, big data environments, enterprise customers demand complete solutions that incorporate the latest technologies and features they need while still remaining cost-effective.

"Customers have high standards," Liang says. "More and more, customers demand a partner, a manufacturer that can deliver a whole solution," he says, which often includes not just the hardware, but also management software.

Liang says Supermicro has been investing large amounts of manpower over the past 15-plus years to develop products that help customers stay ahead of the industry, regardless of whether that customer is from a small enterprise or a large Fortune 50 organization. "It's been a long-term investment," he says.

The fruits of these investments are evident in products such as the company's FatTwin,

which offers the best performance per watt on the market today with 16% less power consumption than other manufacturers' products, Liang says. "The difference is that, with a Supermicro solution, you can save an extra 5, 10, even up to 20% power."

Supermicro was able to achieve this benchmark by fine-tuning its engineering, Liang says, including improved system management and architecture optimization. In addition, the FatTwin has also improved I/O bandwidth. For example, it can support up to eight hot-swappable 3.5-inch drives in 1U.

Supermicro will have updated versions of the products ready to go with Intel's new Haswell launch, Liang says, which will further improve the architecture for better performance, power savings, and functionality. The company has also been upgrading its products so they can handle higher operating temperatures than the typical 20 to 25 degrees Celsius. Liang says the company now has several products that will work at much warmer temperatures, up to 45 to 47 degrees Celsius, so customers can take advantage of natural, free-air-cooled environments, especially in regions with higher ambient temperatures.

Double-Sided Storage

Supermicro has industry-leading storage products, too. The Double-Sided Storage solution, for example, is a high-density storage product in a 4U storage box. It offers more capacity in a limited space, Liang says, with support for up to 72 3.5-inch hard drives that are all externally hot-swappable, so you can easily exchange hard drives when needed.

"Many competitors have high-density storage solutions and offer you 56 or 64 hard drives," Liang says. "We offer 72. The highest storage density in 4U with dual-processor server performance in a single form factor." Within that box, he says, customers can get high-efficiency (95%+) redundant Platinum-level digital switching PSUs and 10Gb or InfiniBand connectivity, for a "really powerful, high-capacity, high-efficiency, high-bandwidth system."

Supermicro's MicroCloud solution is another example of the company's commitment to developing high-density, high-efficiency platforms. In cloud computing environments, cost is important as the end user often has a

fixed spot and set amount of money they can spend, Liang says. "The challenge is to get the capacity and performance as high as possible, which equals performance per dollars."

MicroCloud supports up to 12 uniprocessor nodes within a 3U space. "We're working on 24 nodes and have already proven it's achievable," Liang says. Supermicro expects to release a 3U, 24-node product in the next two months.

In the past two years, Supermicro has also brought a complete rack solution to market. "The product is delivered and ready to power on completely," Liang says. "It's ideal for the customer that wants their new facility to be online right away."

Supermicro can ship the 100% ready-to-power-on rack within a few days, not a few weeks or months like some other manufacturers, Liang says. "Plus," he says, "the solutions come with our system management software fully integrated and tested." Liang notes that Supermicro works closely with customers to validate their solutions prior to shipment. "After they're satisfied, we'll ship it to their facility."

Working To Do More

In spite of all its recent product developments, Supermicro continues to push itself to meet the needs of its customers. "In the past 20 years, every year we have been growing, with no exception," Liang says. But the company hopes for faster growth in the future.

"In the past three years, we have invested 80% more in engineering, system integration,

testing, and R&D to make Supermicro a global company," Liang says. Since the company began, 90% of its operations were in Silicon Valley, he says, but it has been working to expand in Asia for more than 10 years.

"We're already committed to the Asian market," Liang says, and opened offices in Shanghai and Beijing in the past year in addition to operations centers in Taiwan and the Netherlands.

Supermicro has a facility with more than 1 million square feet in Taiwan and the ability to expand another 2 million square feet or more. "In the next 24 months, our capacity could reach more than triple," Liang says, allowing Supermicro to support many more customers with faster time to market, quicker service, and additional cost-savings.

But the company doesn't plan to stop there, Liang says.

"How can we contribute to the industry? By providing basic improvements and better solutions so that customers can save money, especially in terms of power consumption. Our products are easier to maintain and provide better and more performance for less money. Those have been our core values, and we've been very aggressive to fulfill demand." P

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- ❏ 10 to 99
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- ❏ 200 to 499
- ❏ 500 to 999
- ❏ 1,000+

2. How often do you purchase computer hardware/software?
- ❏ Weekly
- ❏ Bi-weekly
- ❏ Monthly
- ❏ Quarterly
- ❏ Annually
- ❏ No Involvement

3. What is your annual computer hardware/ software purchasing budget?
- ❏ $0 to $9,999
- ❏ $10,000 to $24,999
- ❏ $25,000 to $49,999
- ❏ $50,000 to $99,999
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COMPANY TO WATCH

ServerMonkey Helps Businesses Save Money

Buying Or Selling, Businesses Save By Repurposing Electronics

MORE COMPANIES are discovering they can satisfy their computing technology needs, protect the environment, and save money at the same time by purchasing refurbished equipment. But selecting the right vendor is critical, as companies must ensure the equipment they are buying has been serviced properly and will fill their needs.

ServerMonkey is a Houston, Texas-based technology vendor that is committed to helping companies get a better return on their technology investment. ServerMonkey buys used equipment and then upgrades it to the specifications of new buyers, making sure along the way that each product goes through a full regimen of evaluation and diagnostic procedures. While configure-to-order (CTO) refurbished servers are their specialty, the company also sells a wide range of other types of refurbished tech products and components.

"The number of options that are available for each CTO server system, whether it be a server or workstation, are almost innumerable," says Abram Flansburg, ServerMonkey's supply chain manager. "Customers can order any combination of processor, memory, hard drive, or even small peripheral components like network adapters. If an option is not available on our website, customers can always call us directly to request further customization."

Once the entire system is customized, configured, and put together, Server-Monkey performs a full burn-in test, which can be tailored to a specific industry or use case to make sure the product will perform as expected immediately after implementation. When testing is complete, the company will ship the system in well-secured packaging to prevent damage from occurring during delivery.

ROI For Environment & Your Company

The benefits of buying refurbished equipment go beyond keeping products out of landfills and helping the environment – there's a positive effect on a company's bottom line as well. "Refurbished equipment is a much more affordable option for small businesses, particularly non-profits that tend to have smaller budgets for IT expenditures," says Layla Wright, CEO of ServerMonkey. "The customer gets a product that functions to the same specifications as a brand new unit, but at a much lower price point."

Customers buying refurbished servers get units that are customized to their specifications, and a one-year warranty provides peace of mind. ServerMonkey offers a no-hassle replacement and refund process if a product fails for any reason. Live tech support also is available for customers who need any assistance.

Selling Made Easy

ServerMonkey buys as well as sells used equipment. If you are ready to upgrade and you have equipment you're trying to get rid of, request a Buy Back Quote and you can make money and save landfill space at the same time.

"ServerMonkey wants to partner with companies that care about the full life cycle of the product they produce or use," Wright says. "Finished products should have a robust aftermarket life, so that product is repurposed or recycled with minimum impact on the environment while improving ROI for the original owner and adding value for the secondary owner." P

Company Name:
ServerMonkey

Location:
Houston, Texas

URL: www.servermonkey.com

Date Company Founded: 2011

Interesting Fact: Server Monkey helps reduce e-waste going to landfills. The EPA estimates only a quarter of consumer electronics products are repurposed or recycled -- the rest are thrown away.

FEATURED PRODUCT

Monitoring Your Network's Heartbeat

Interface Masters Niagara 2831 Helps Ensure Uptime By Managing 40Gb Inline Appliances

YOU CAN INVEST in the fastest network available, spend money on the newest technologies, and pilfer away your budget on fancy tools, but in the end, the livelihood of today's data centers and the enterprises that rely on them comes down to one word: uptime.

A bypass switch such as the Niagara 2831 from Interface Masters Technologies is an essential part of networks that depend on having the best possible uptime.

No More Single Point Of Failure

Inline monitoring appliances such as intrusion prevention systems (IPS), firewalls, WAN optimization devices, and unified threat management systems create single points of failure in the network. If the appliance loses power, has a software failure, or is somehow accidentally removed, traffic comes to a halt.

"Companies can't afford downtime," says Matthew Butrimovitz, Marketing Manager of Interface Masters Technologies. "If an IPS fails for 10 minutes, that's 10 minutes of no network availability."

A bypass switch provides a fail-safe access port for these inline monitoring appliances, automatically routing traffic around the appliance when it's down.

The Niagara 2831 is a single segment 40Gb intelligent active bypass switch with extensive failover/bypass capabilities. It's a truly plug-and-play device and does not require drivers installed on any connected appliances.

When there's an appliance failure, loss of power, or other issue, the Niagara 2831 diverts traffic away from the inline device to ensure network traffic continues to flow through the link. Once traffic is diverted, you can repair, remove, or replace the problematic appliance without bringing down the network. After the system is back up and running, the Niagara 2831 automatically diverts traffic back to the inline device.

First To Market

When it was released last fall, the Niagara 2831 was the first to the market with 40Gb capabilities, building upon Interface Masters' line of 10Gb and 1Gb bypass switches.

"In recent years, as we saw development of more appliances such as IPS solutions ready for 40Gb, we saw the need to grow," Butrimovitz says. "This shows where our technology is headed. Not many other people can do 40Gb."

The Niagara 2831, like all Interface Masters products, is made in the United States. "Our headquarters are in San Jose," Butrimovitz says. "All of our hardware and software engineering is done in-house with our team, and manufacturing happens within two miles of us."

Manage The Heartbeat

You can use the Niagara 2831's extensive management software and command-line interface or secure Web UI to configure the device's heartbeat options, including pattern, frequency, and number of link losses prior to activating or disabling bypass. The heartbeat technology helps minimize packet loss by checking system status as often as every 2 milliseconds, Butrimovitz says.

If a system failure or other special event occurs, you can be notified via email. Syslog support lets you consolidate log data from various systems, providing management, traceability, and security auditing across a variety of devices, regardless of platform.

Because the Niagara 2831 supports both active and passive failover, you know your network won't miss a beat. In the event of a hardware failure, software crash, or link loss, the active bypass feature ensures a seamless failover will occur without interrupting the communication session. In the event of a power failure, the passive bypass functionality keeps the network flow moving. The Niagara's redundant, hot-swappable internal power supplies add to its reliability.

All of these notification, logging, and bypass features ensure the Niagara 2831 is a valuable part of a data center. "It's not just another switch," Butrimovitz says. "It really helps with the overall monitoring of the network." P

Interface Masters Niagara 2831

(408) 441-9341 ext. 147
www.interfacemasters.com

A 40Gb intelligent bypass switch designed for plug-and-play connectivity. It features active and passive bypass switching capabilities and a heartbeat technology that automatically checks system status.

Interface Masters
T E C H N O L O G I E S
Innovative Network Solutions

FEATURED PRODUCT

Spot Potential Problems Before They Occur

Geist's Environet Offers Predictive DCIM Both IT & Facilities Can Use

How is your data center? Are your systems, applications, and other equipment running efficiently? Or could you be on the brink of disaster and not even know it?

Critical components of the data center need to be monitored and managed. Being able to see potential problems before they become catastrophic is essential. But if you're skeptical about the need to know the heartbeat of the systems you're in charge of—no matter what size data center you operate—consider the high cost of downtime. Even a small outage or other problem can cause big problems for your business.

That's where data center infrastructure management tools such as Geist Environet prove their worth.

Alarm, Report & Trend

"A good DCIM solution will allow the end user to collect real-time data that will alarm, report, and trend on important infrastructure," says Matt Lane, president of Geist DCiM. "It is key that they can do this without spending a large amount of time and effort."

What words best describe Environet, Geist's enterprise DCIM solution? "Customizable, cohesive, comprehensive, and cost-effective," Lane says. Perhaps most important, he says, "Environet goes beyond typical monitoring systems by

surpassing reactive or even proactive methods to provide the user with predictive toolsets, informing about potential problems before they become catastrophic."

See The Details

With Environet, you'll be able to graphically see the details of all mission-critical equipment, from an entire building complex to the smallest component within it. And the program isn't limited to just one location; it monitors all mission-critical components from anywhere, even if it's multiple locations around the globe.

Unlike other tools, Environet's modular platform lets you build as you grow. "Rather than use large capital resources up front, the customer can manage their budget more effectively and know that they aren't overspending on a system that is too large," Lane says. "We strive to build their system

to their needs and not ours."

Environet's drill-down capabilities let you track statuses of an enterprise, dive into an individual facility, or view a single point of information, Lane says. "Graphics, calculations, sequences, and more can all be customized to fit each facility," he says. You can pick from Environet's feature list and build a system that meets your data center's unique needs.

Environet appeals to both IT and facilities groups, Lane says, because it gets all your critical equipment working together and under one interface for unified management. That's no small feat considering a typical data center has various types of assets and equipment, all using different protocols for communication.

Easy To Integrate

You can be sure the system will work efficiently with your existing equipment. Environet is easy to integrate into any facility with its support for a variety of manufacturers and multiple communication protocols, including SNMP, Modbus, BACnet, and LONworks. Plus, it works

with current building and network management systems.

Customers like Environet's industry-leading management features, Lane says. Those features rely on the real-time data Environet collects, letting you set alarms and alerts so you can be notified when trouble is starting with plenty of time to make corrections.

You can also use the real-time data to create custom dashboards showing key performance indicators for a one-screen look at the most important metrics. With Environet's ability to trend data over time, you can be sure you're making proactive, rather than reactive, decisions. P

Geist Environet

(800) 432-3219
www.geistglobal.com

A comprehensive DCIM tool that makes it easy to monitor your data center. Environet goes beyond typical reactive or proactive methods by providing predictive toolsets that can pinpoint potential problems before they become disasters.

COMPANY TO WATCH

Siemon Expands Data Center Site

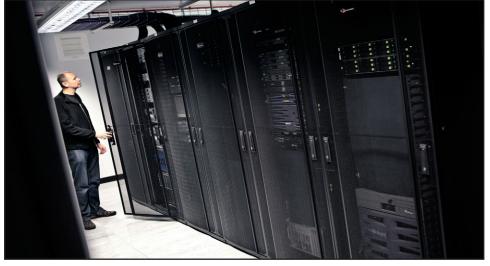New Content Demonstrates Importance Of Cabling

SIEMON, a leading global network infrastructure specialist, has created a new Data Center Infrastructure Solutions site at www.siemon.com/datacenter with access to Siemon's wide range of data center solutions, Siemon Data Center Design Services and data center customer case studies—all of which emphasize the importance of data center cabling as a strategic asset.

The new Data Center Infrastructure Solutions site offers an intuitive, easy-to-use design that allows end users and data center professionals to quickly navigate through innovative Siemon data center solutions that support two to three generations of network switches, servers and storage devices. These data center solutions include shielded and unshielded copper solutions from Z-MAX® category 6A to the TERA® category 7A/class FA end-to-end systems; multimode and singlemode fiber cabling systems and plug-and-play assemblies; intelligent infrastructure management; interoperable high-speed interconnect systems; and a comprehensive line of data center cabinets, cable management,

and cooling and power systems that optimize space and energy efficiency.

From the site, users can learn about how a high-performance, reliable cabling system is critical to data center infrastructure, receive guidance on selecting and designing the cabling infrastructure upon which data centers rely, and access a variety of educational tools such as Siemon's online Standards Informant for the latest standards information, informative data center white papers and a free data center e-book, "Deploying, Managing and Securing An Efficient Physical Infrastructure." Dozens of current customer case studies offer an intimate look into how Siemon is helping data center customers in markets around the world achieve a standards-based data center infrastructure that offers high-speed performance, enhanced cabling management, superior thermal management and power efficiency for maximum uptime and reliability.

"With 70% of network problems attributed to poor cabling and cabling upgrades being the most disruptive, labor-intensive portion of a data center, it is important

for customers to do it right the first time and to understand the importance of the cabling infrastructure to last 10, 15 or more years," says Robert Carlson, vice president of global marketing at Siemon. "As Siemon has focused more on data centers over the last decade with many high-performance product innovations for this critical space, we also felt the need to develop a more data center-focused portion of our website, making it easier for end users and data center professionals to access the standards information, educational tools and solutions they need to succeed."

From the company's revolutionary new product introductions such as its new LC

BladePatch®, to its green efforts, global network of Siemon Certified Installers and comprehensive data center solutions, to educational tools, events and information to help navigate data center customers through critical design and deployment considerations, Siemon and its new Data Center Infrastructure Solution site are connecting the world to a higher data center standard. P

Company Name:
Siemon

Location:
Watertown, Conn.

URL: www.siemon.com

Date Company Founded: 1903

Interesting Fact: Siemon is an industry leader in innovative network cabling solutions. You can view Siemon's new Data Center Infrastructure Solution site at: www.siemon.com/datacenter

COMPANY TO WATCH

Tackling Today's Air-Handling Challenges

Mestex Offers HVAC Innovations, Range Of Products For The Data Center Market

THERE'S A SEEMINGLY ENDLESS array of vendors providing solutions to help solve your data center cooling issues. How do you find a vendor you can trust? Industry experience is one of the best judges, and Mestex has no shortage of that.

"Our evaporative cooling product lines have been in existence for 66 years," says Mestex President Mike Kaler. "We predate our competitors by at least 15 years." Mestex uses that experience and knowledge of the industry to understand your unique data center cooling needs and provide the HVAC systems that will best match your needs and building type.

Unlike many cooling vendors, Mestex offers a complete line of data center cooling products, including portable, direct evaporative, indirect evaporative, and packaged rooftop units.

Aztec

Portable

The Koldwave products offered by Mestex are ideal for data centers in need of either permanent or semi-permanent cooling in server and telecommunications rooms, network closets, and any other area with cooling needs.

Koldwave products can provide between three-quarters ton and 5 tons of cooling and come in both water-cooled and air-cooled versions. A steel framework, stainless steel construction, and heavy-duty industrial casters make the units among the sturdiest in the industry. Color-coded connections simplify installation, and digital controls with an optional IR remote control make management easy.

Direct Evaporative

The Alton Seasonal Make-Up Air Unit features a direct evaporative cooling option that's one of the most efficient ways to cool, changing warm dry air into cool air and costing about one-fifth the cost of mechanical air conditioning.

Indirect Evaporative

An indirect evaporative cooling unit, such as that found in the Aztec system from Mestex, uses a cooling tower and chilled water coil integrated in the unit, an approach that simplifies installation and data center infrastructure requirements. You can configure the Aztec to combine indirect evaporative cooling and fresh air cooling for greater energy efficiency.

Evaporative cooling units have traditionally been beyond the price range of what small to midsized enterprises can afford. But the Aztec units solve that by providing self-contained, rooftop-installable, "bite-sized" units pre-engineered and preconfigured with digital control and monitoring software. Plus, the Aztec works with and without underfloor constructions.

Beyond managing the unit's temperature and pressure control via up to five cold-aisle temperature and one cold-aisle pressure sensors per unit, the digital control system monitors operation and provides service notices, temperature trend recording, and optional GUIs accessible onsite or via Internet access.

Applied Air Fresh Air Package

Packaged Rooftop Units

More than six years of research and design went into building the Applied Air Fresh Air Package from Mestex. It's a dedicated outdoor air system that can also be used with return air off of the data center hot aisle.

While most similar units can handle air up to 90 degrees Fahrenheit, the Fresh Air Package has been certified for up to 115 degrees, offering greater flexibility for raising your cold aisle temperature. The included DDC controls are compatible with BACnet, LON, N2, and Modbus. ▣

Company Name: Mestex
Location: Dallas, Texas
Phone: (214) 819-5221
URL: www.mestex.com

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Computer Peripheral Solutions, LLC manufactures numerous products that are targeted towards very economical problem resolutions and increasing efficiencies within various niches in today's networking, such as local and remote controlled power systems, remote switching, telephone line sharing and dial security. They can be used in a variety of applications such as kiosks, monitoring equipment, security systems, observatories and lab/test centers, to name a few. Most units offer several different types of control, for example: USB, Wireless, ring count, touch-tone, cell and web. The products range from a single box to the more flexible and scalable modular systems.

The U-X3 (pictured above) is an economical, but extremely flexible AC power control device that can be used to control the AC power to three different devices via Ethernet, USB or Wireless.

The products were developed as a result of specific user requirements, others as OEM products while still others evolved solely on speculation. This has resulted in a rather diverse product line and has also served to expand the company's technology base.

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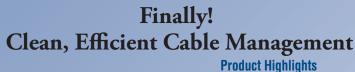
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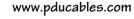
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Index Ranks U.S. As Top Location To Build A Data Center

For its 2013 "Data Centre Risk Index," Source8, Hurley Palmer Flatt, and Cushman & Wakefield identified the many factors that affect data center performance (including cost per kilowatt hour, internal bandwidth, and ease of doing business) and ranked countries from lowest to highest risk. Here are the top 10 countries on the index, representing the locations with the least risk for building new data centers.

Locations with the least risk for building new data centers:

1 – United States
2 – U.K.
3 – Sweden
4 – Germany
5 – Canada
6 – Hong Kong
7 – Iceland
8 – Norway
9 – Finland
10 – Qatar

least risk   most risk

Study Looks At Use Of Electronic Devices On Planes

As the Federal Aviation Administration continues to evaluate its policies covering use of portable electronic devices (PEDs) during flights, including takeoffs and landings, a new study takes a look at how—and how often—airline passengers are using devices. "This study showed us that most travelers are using their PEDs as often as possible while traveling, and many would like even more opportunities to use their devices," says Russell A. Lemieux, executive director of the Airline Passenger Experience Association, which worked on the study with the Consumer Electronics Association.

Among the findings:

40% of passengers would like to use their devices during all stages of flight, including takeoff and landing.

30% of passengers have accidentally left an electronic device turned on during a flight.

21% of fliers say they switch their devices to airplane mode rather than shut off the devices.

Smartphones are the most commonly used devices (28% of passengers), followed by notebooks (25%), tablets (23%), digital audio or MP3 players (23%) and eReaders (13%).

28%	25%	23%	23%	13%
Smartphones	Notebooks	Tablets	Digital audio or MP3 players	eReaders

IDC: Tablets Will Out Ship Portable PCs This Year

Tablet shipments will outpace portable PC shipments this year, and, by 2015, tablet shipments will outpace the entire PC market. That's according to a new forecast from IDC in its Worldwide Quarterly Tablet Tracker. IDC expects the PC market to have its second year of negative growth. "What started as a sign of tough economic times has quickly shifted to a change in the global computing paradigm, with mobile being the primary benefactor," says Ryan Reith, program manager for IDC's Mobility Trackers. "IDC continues to believe that PCs will have an important role in this new era of computing, especially among business users. But for many consumers, a tablet is a simple and elegant solution for core use cases that were previously addressed by the PC." Two trends—lower selling prices and a shift toward smaller screen sizes—mark major shifts in the market, IDC notes.

Smartphones Now Dominate Cell Phone Category

If you think you're starting to see just as many smartphones around as other types of mobile phones (i.e., those classed as "basic" or "feature" phones), you're right. The rising tide of smartphones is nearing the point at which there will be more smartphones sold than other types, according to a new report from NPD DisplaySearch. In fact, the research firm forecasts that by the end of this year there will have been more smartphones sold (937 million) than basic and feature phones (889 million). NPD DisplaySearch expects the trend to continue at the same rate, so that by 2016 there will be about 1.45 billion smartphones shipped worldwide compared to about 700 million other phones.

Renegade IT Spending May Not Be All Bad

Is renegade spending on IT a problem in your organization? According to a new report from Forrester, about 90% of business decision-makers outside of IT are spending their own budget on technology products and services. About a quarter of them spend 21% or more of their budgets on IT. These "high spenders," as Forrester calls them, have good relationships with IT and note that their use of consumer technology has changed their expectations of how technology should be used. Forrester reports that they are likely to hire their own IT staff and invest in smartphone apps and analytics. How should IT leaders deal with this? "CIOs have to pivot and act more as a consultant to the business—the days of a centralized controlled IT world are over," says Forrester analyst John McCarthy.

New Network Technologies Could Boost Energy Efficiency

Communications networks have great potential for reducing energy consumption, according to research by GreenTouch. In fact, the consortium dedicated to improving energy efficiency in data and communications networks found that the net energy consumption of networks can be reduced up to 90% by 2020, even when accounting for significant increases in traffic. Mobile networks will benefit the most from energy efficiency efforts, GreenTouch reports, primarily because they are the fastest growing networks in terms of data volumes and are the most inefficient. GreenTouch points to several technologies, architectures, and protocols that could improve energy use in communications networks, including small cells deployments in dense urban environments, infrastructure sharing among operators, and discontinuous transmissions during periods without traffic.

Power Utilities Face Frequent Cyberattacks

A new U.S. congressional report, "Electric Grid Vulnerability: Industry Responses Reveal Security Gaps," has shed light on the many technological vulnerabilities facing American power companies. Representatives from more than a dozen power companies, many of which are privately owned, report "daily," "constant," or "frequent" attempted cyberattacks "ranging from phishing to malware infection to unfriendly probes," with one company claiming to be the target of 10,000 attacks every month. The chief concern is that these threats could affect the U.S. power grid, which, according to the report, serves more than 300 million people and is made up of more than 200,000 miles of transmission lines and more than 1 million megawatts of generating capacity, and it is valued at more than $1 trillion. The report's authors, representatives Edward J. Markey (D-Mass.) and Henry A. Waxman (D-Calif.), wrote the report to encourage action on the Grid Reliability and

Infrastructure Defense (GRID) Act, which was introduced in 2010 but has not been passed.

Sales Up At Leading Semiconductor Suppliers

The top 20 semiconductor suppliers reported sales up 2% year over year in the first quarter. It's a modest increase, but slightly better than the 1% growth reported among the semiconductor market as a whole, reports semiconductor market research firm IC Insights. Individual suppliers had a range of year-over-year changes from a growth of 28% to a decline of 31%, IC Insights reports. Among the top 20 semiconductor suppliers (ranked according to sales), nine are headquartered in the United States, four in Japan, three in Europe, two in South Korea, and two in Taiwan.

Server Market Not Off To A Good Start In 2013

With the exception of the United States and Asia/Pacific regions, all other areas worldwide reported drops in server shipments

and revenues during the first quarter of this year, bringing total server shipments down 0.7% and revenues down 5% year over year. Gartner's latest stats show that the largest drops were in the RISC/Itanium Unix server market, where shipments were down 38.8% and revenues were down 35.8%. x86 server shipments were relatively flat and revenues were up 1.8%. "Following a challenging 2012, 2013 started in very much the same way," says Adrian O'Connell, research director at Gartner. "Budgets are restricted and server infrastructure spending is clearly not the highest priority for many organizations."

Business Intelligence & Analytics Are Top Focus For CFOs

According to a new study from Gartner and the Financial Executives Research Foundation (FERF), 15 of the 19 business technologies that CFOs believe need more support relate to business intelligence (BI), analytics, and performance management. The survey findings shed light on a potential dilemma: CFOs finding more value in

BI and analytics than CIOs. "If the CIO does not understand this," says Bill Sinnett, senior director, research, with FERF, "then there's a chance the CFO will sponsor his or her own initiatives and not coordinate them with the IT organization. This demonstrates the trend that BI is becoming less of a CIO responsibility and more of a CFO and line-of-business responsibility." The study also found that in the BI area, corporate performance management solutions are CFOs' top priority, and that CFOs show a "strong interest" in cloud computing and mobility.

Mobile Apps Increasingly Dependent On Cloud Services

Research firm Gartner estimates that by 2016, 40% of mobile application development will involve cloud services, such as a Web-based platform that supports storage for user data. This trend reflects the complexity that is growing as more users are interested in apps that integrate with the online services they use, particularly in areas such as social media and data storage. It creates a more complex development environment and, according to Gartner, more risks to watch for. To address this potential problem, Gordon Van Huizen, research director with Gartner, suggests that companies "extend awareness of the issues to the broader organization, as well as the organization's policies for cloud services, so that mobile applications built outside IT are subject to the same oversight and governance as those built within IT."

Internet Crime Reaches New High

Last year, the Internet Crime Complaint Center received about 290,000 consumer complaints of fraud. About 115,000 of those complaints included a loss of money averaging about $4,573 to reach a total dollar loss of about $525 million, up 8.3% from a year earlier. According to the Internet Crime Complaint Center, consumers in California, Florida, Texas, New York, and New Jersey registered the most complaints. The two most common types of fraud were auto fraud, where criminals attempt to sell vehicles they don't own, and FBI impersonation email scams, where names of government agencies and officials are used in an attempt to defraud consumers.

Maintain Cooling Equipment

Prevent Overheating & Potential Downtime Through Regular System Maintenance

IN AT LEAST ONE WAY, data center HVAC and CRAC units are no different than any other equipment in that they require regular maintenance to ensure they're performing at their best. That's why you need to create a maintenance plan that details what to clean and how often.

✔ Understand The Risks

"Data centers are typically the backbone for your company," says Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com). "If they go down, you stop operating." For most companies, this is more than enough of a reason to perform regular maintenance. But there are also other issues. For instance, if the air conditioning goes out, your employees "can still work, but they will not be happy," Dickson says.

Inside the data center, poor cooling performance can lead to multiple issues over an extended period of time, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). "With cooling towers and evaporative condensers, free floating organic masses can blind sensors, block water flow, and compromise your cooling systems' ability to cool critical equipment," he says. "An improper maintenance system can greatly decrease the cooling capacity of your system. A lack of a good maintenance system will cause failures of your equipment and reduce its life."

Steve Wellander, service manager at Data Aire (800/347-2473; www.dataaire.com), says that "if belts are not adjusted routinely, they can begin to slip or break, reducing the performance or eliminating the amount of air circulated." The potential complications don't end there. "If air filters are not changed, the volume of air through the unit decreases," Wellander says. "If bearings require greasing and are not maintained, they can fail, requiring timely and costly repairs."
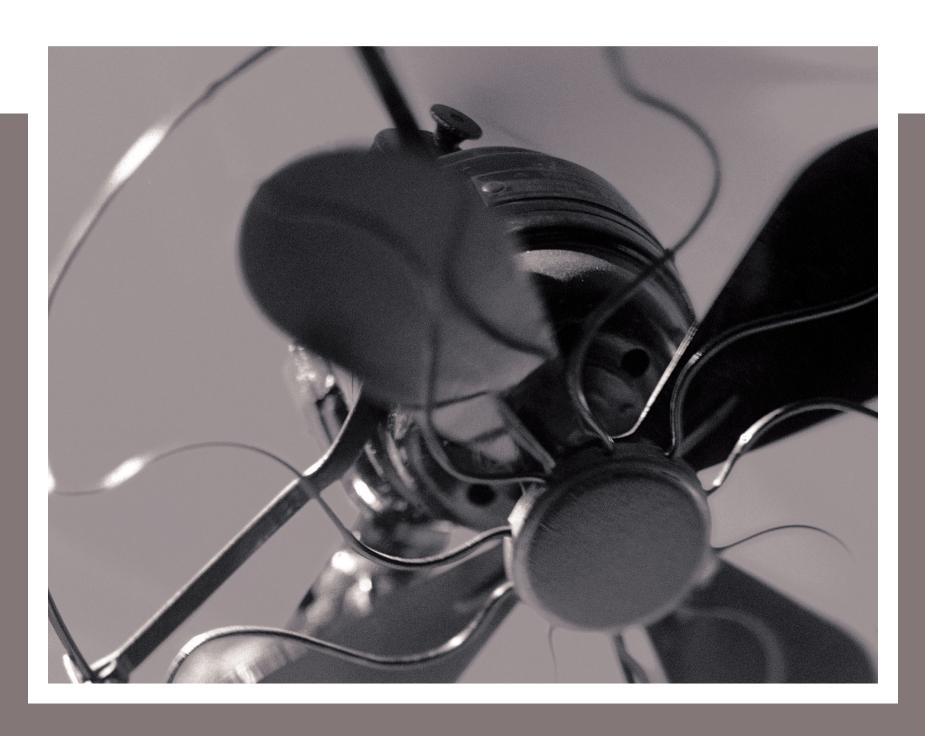
You also need to consider the outside of your data center when it comes to cooling maintenance. Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says that outdoor heat exchangers can become clogged with pollen and other environmental debris, especially during the spring and summer months. If those heat exchangers are clogged, they will fail, she says, and your CRAC unit will be out of commission until the heat exchangers are cleaned out.

✔ Start A Maintenance Plan

You'll want to set up a maintenance schedule and stick to it. Dickson says that this maintenance plan should be published, so all employees have access to it and there are official protocols to follow. Having an organized list will make it much easier to check off crucial maintenance functions and make sure your equipment is running at full capacity.

Viars says that, in addition to an internal maintenance plan for employees, you should "put a service contract in place for your CRAC units that will ensure consistent maintenance doesn't fall through the

cracks." Speak with a third party that has experience with air conditioning and heating maintenance, because they'll know what needs to be cleaned and how often.

Having a plan in place will also ensure you are ready for breakdowns when they are more inconvenient than usual. Wellander says that "mechanical equipment almost always fails at the least opportune time," whether it's "weekends, holidays, or when you have your boss in the data center." You can be prepared by performing routine maintenance.

✔ *What To Clean & When*

There are some best practices you can follow when setting up your maintenance plan. For instance, Viars says that, while some data centers perform maintenance quarterly, maintenance should be performed at least semi-annually. You also have to know exactly what needs to be done.

"You'll want to make sure that all of your CRAC units are set at the same temperatures, as well as the same humidity levels; this will ensure that all units are working in unison," Viars says. "Condensate drain lines should be checked for clogs, condensate pumps should be examined to ensure proper functioning, and refrigerant levels should be monitored to verify that there aren't any leaks present. Lastly, just like in your car, it is important to have the belts examined, and replaced if needed, to prevent breakage and unplanned downtime."

Cleaning filters is one a task that's often overlooked, says Mike Paulson, president of AmeriCool (800/680-0725; www.americoolinc.com). "Most simple maintenance revolves around proper airflow," he says. "Ensure filters are replaced or washed as recommended."

Viars adds that it's also important to take note of how quickly filters are becoming dirty. If you notice an increase in how much debris the filters are catching in between changes, it might signify an issue, she says.

✔ *Know Your Limits*

There are some situations where outside help from a professional is necessary. Koty points out that many maintenance professionals will use infrared cameras to scan data centers and spot potential cooling issues. He says that companies should also be wary when dealing with chemicals and water treatment programs for cooling towers. "There is just too much to know about chemicals and chemistry to handle this internally."

Paulson says any refrigerant work should be left to certified professionals, and Viars adds that solving mechanical issues is something better suited for a data center HVAC professional. Viars also recommends companies have "a service contract in place to ensure regular maintenance, provide early detection of any potential concerns, and have the peace of mind of having a professional on-call in the instance an issue arises."

The key is to perform the tasks that fit your workforce's experience level and then build a relationship with a third party that can take care of the particularly difficult tasks. ▯

✔ *Your Eyes & Ears On The Ground*

Most data centers rely on technology, such as monitoring systems, to let you know whether a piece of equipment is working correctly. But when it comes to cooling issues and air conditioning systems, you also need to include the human element. After all, employees that work in and around the data center will be more aware of their surroundings and could spot potential problems earlier.

"Advise your data center employees to be mindful of anything out of the ordinary," says Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "Since cooling essentially operates in the background, it is easy not to notice irregular noises coming from the CRAC units or over-condensation. If personnel know what signs of trouble to look for, it will increase your chances of addressing the concern before any major issues arise."

✔ *Do It Yourself, Take Precautions*

If you decide to have an employee perform maintenance rather than utilizing a third party, you need to make sure that health and safety precautions are a priority. Although it may save you money to perform the maintenance internally, you need to ensure your employees are prepared for the job.

"Cooling towers are home to some very unhealthy microorganisms and contaminants that can present some serious health risks," says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). "Remember to always wear a dust mask, protect yourself from scrapes and scratches, and thoroughly clean up after working with your cooling system."

BONUS TIPS:

✔ *Monitor Your System*

To determine whether your cooling systems are in need of more work than just routine maintenance, you need to "monitor all equipment for temperature and power levels with a remote monitoring system that provides various forms of alerting," says Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com). By noticing increases in operating temperature, you can respond quickly and troubleshoot a potential problem with your cooling equipment.

✔ *Prepare For New Equipment*

"Most often, new equipment will run hotter than previous equipment," says Mike Paulson, president of AmeriCool (800/680-0725; www.americoolinc.com). Companies need to check with maintenance and building managers to confirm their air conditioning system is equipped to handle the additional heat load, he says. If your monitoring system picks up on these higher temperatures, you may need to readjust it in accordance with the new equipment's more flexible temperature requirements.

SIX QUICK TIPS

Better Airflow Management

Tips For Identifying & Remedying Data Center Airflow Problems

HOW DO YOU SOLVE data center hot spots and other airflow-related problems? If your enterprise is like most, it's likely spending money it doesn't necessarily need to.

"Too many times we think that the answer to hot spots and airflow-related issues inside the data center is to lower the temperature point on the AC units," says Matt Burkle, national channel manager at HM Cragg (800/672-7244; www.hmcragg .com). "The problem with this is that it not only wastes energy and money, it doesn't necessarily solve the core issue."

✔ Know Where To Look

The first step toward improving data center airflow is understanding the problem. Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com), says the link between cooling efficiency, cooling capacity, and proper airflow can't be discounted. "The two have to work together if you are going to maximize your cooling efficiency. All the capacity in the world won't fix airflow problems like obstacles, air mixing, or lack of static pressure under the raised floor."

Burkle says the simple way to see if your data center has an airflow issue is to spend time walking around during different times of the production day. "If you are uncomfortable in the cold aisle, then chances are that your IT equipment is suffering the same fate."

Gabriel Pizano, AmeriCool national sales and service manager (800/680-0725; www .americoolinc.com), says other than blocked or restricted airflow, a common problem is an improperly sized AC system. "An undersized cooling system will result in equipment running hotter than normal," he says, reducing lifespan and efficiency. "For most SMEs, cooling a data center usually involves turning down the entire building's AC," he says.

Poor cable management is another common problem. Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says while larger enterprises typically conduct significant planning, including cable management considerations, when designing and/or upgrading a network, many administrators of networks in small to midsized enterprises "don't realize the importance of proper cable management and how it promotes efficient and effective airflow."

As for airflow leakage—something generally caused by insufficient sealing—Viars says data centers can't maintain optimal temperatures for equipment if air isn't traveling the right path. "Warm air begins to recirculate, which makes for less than ideal conditions within the cabinets," she says. "Airflow leakage is likely caused by either a lack of understanding regarding airflow principles or the inability/unwillingness to allocate funds to essential airflow management accessories."

Koty says one sign of a problem is a loss of static air pressure, which can occur when too many floor panels are removed at one time. To check for proper static pressure, Koty says to use a handheld anemometer with temperature gauge to measure airflow

coming out of your perforated tiles and air temp. "I recommend at least 300cfm per tile with air temperature going into the inlets of your cabinets between 64 to 72 degrees."

✔ Spot & Fix The Problems

To identify airflow problems, Ameri-Cool's Pizano suggests measuring air temperature at hot spots in racks. "Ensure the temperature at the top of your rack (since heat rises) doesn't exceed the equipment's optimal operating temperature," he says. Because the most common airflow problem is inadequate cooling, he says, enterprises should make upgrading cooling capacity their first priority. "Supplemental cooling with portable, ceiling, or new rooftop units are a common remedy," he says.

Viars says identifying airflow issues can be easy (a server failing due to overheating is an obvious sign), but doing so early on is important. Monitor temperatures within cabinets, she says, whether using sophisticated monitoring software with temperature probes or simple adhesive temperature strips. This will "help ensure you're one step ahead of a potential disaster," she says.

Visually assess cabinets inside and out. Unkempt cable bundles that appear to be obstructing airflow probably are, Viars says. And if you're maintaining operating rows/aisles of cabinets, look for gaps between each cabinet. "As small as they may be, gaps can contribute to inefficient cooling," she says.

Koty says to watch for airflow problems created by perforated floor tiles placed too close to CRAC units. "Never place perforated tiles closer than 6 feet (three tiles) from your AC units." Doing so could result in air being sucked into rather than blown out of the tile.

✔ Make Use Of Blanking Panels

"It sounds funny, but one of the most simple and inexpensive ways to manage airflow is the utilization of blanking panels," Burkle says. He points to toolless blanking panels that can be inserted quickly in any open U space within a rack, ensuring any cold air in front of the rack is forced to flow through a piece of IT equipment to remove heat and do its job.

Burkle says blanking panels also cut off any hot air that may be pushed forward through open U spaces caused by cable management issues in the rear of the rack.

✔ Cut Costs Where You're Able

Viars says airflow management doesn't need to be expensive. Though cable management can be complex, she says, it "can be facilitated by a few well-placed Velcro ties" that are effective and inexpensive if done right. Smaller enterprises "can buy temperature strips for $10 a pop that will do the job just fine," she says, and buying filler panels in large quantities is also fairly low-cost.

When it comes to cooling, Pizano says, many distributors offer special leasing arrangements for temporary or seasonal cooling needs and most have rent-to-own programs. Additionally, portable commercial AC units cost significantly less than adding a rooftop system and are easily portable. ▣

✔ Cable Management After Installation

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says that, although it's easier to implement cable management in a cabinet prior to installing equipment, it's not impossible to do in a cabinet already populated. She recommends vertical and horizontal cable management and ensuring there are no unnecessary gaps between equipment. For racks and cabinets not fully populated, use filler panels to cover open spaces, she says, and grommets (especially brush-style) in cable entry points to keep air from escaping.

✔ Manage The Heat

"Managing the heat that is generated within the data center is the single greatest way to ensure that the cold air you supply gets to where it needs to go," says Matt Burkle, national channel manager at HM Cragg (800/672-7244; www.hmcragg.com).

To help manage the heat created in your data center, make use of products such as rack-level heat containment chimneys, aisle or row air containment systems, and even self-contained cooling enclosures, Burkle says. "In all of these scenarios, the core concept is the same: The heat that is generated is captured and removed before it can mix with the cold air being supplied to the room." If you eliminate air mixing and remove the heat before it can negatively affect the cold air supply, then the air at the inlet of the racks will be the correct temperature, he says.

Burkle recommends adopting a strategic environmental monitoring plan with temperature/humidity/airflow monitors at various places in the front of the enclosures. "I'm not too concerned about the heat behind the rack as long as that hot air is being managed, but the temperature at the front of the rack is critical to monitor."

BONUS TIPS:

✔ Check Your AC Capacity

Gabriel Pizano, national sales and service manager at AmeriCool (800/680-0725; www.americoolinc.com), says part of effective airflow management is ensuring the building's AC has the proper cooling capacity to cool equipment. "With proper cooling BTU/hr, SMEs can maintain their equipment at efficient temperatures and upgrade to new equipment," he says.

✔ Be Consistent

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says small to midsized enterprises must consistently monitor and document temperatures to spot unfavorable fluctuations. Do so on a schedule, she says, to more easily identify patterns. And be consistent with cable management. Although it might be tempting to worry about cabling after installing new equipment, "If you do it right the first time, you'll save yourself a lot of trouble," she says.

Pinpoint The True Costs

Strategies To Help Identify The Real Expenses & Returns On New Projects & Products

DATA CENTER MANAGERS often dive into new projects or new product or technology implementations without getting a complete picture of all the costs involved.

But failure to perform due diligence in terms of R&D can result in mistakes, project delays, increased implementation costs, customer impacts, outages, and threats to job security, says Ed Lane, regional account manager at Gillaspy Sales (805/386-1166; www.gillaspysales.com). Here's how to gain a better idea of the true costs of a new project or product implementation.

✔ *Beware The Push*

Data center managers are caught in the middle, similar to "being at the narrow point of an hourglass," says Lane, who is a former IT director and technical project manager. Customers from the bottom up push for constant technology and security improvements, while upper management and investors apply pressure from the top down to keep costs down and security up. "So the data center manager is being squeezed from both sides with opposing wishes. It's tough," he says.

At the same time, data center managers deal with intrusion attempts, hackers, and end user support issues. Often, he says, "because of those pressures, a manager will get pushed into projects before he or she is ready or has had adequate time to research, prepare, or study the issues ahead of time." With the technology landscape changing constantly, Lane says, keeping pace and making the right decisions concerning a project "can be nearly impossible."

✔ *Seek Resources*

There are numerous resources and tools (including free utilities) available to help plan, implement, and analyze new projects and products. Lane says there are "almost too many."

Nothing, however, substitutes for organization. Often, Lane says, such tools add complexities managers don't need and become obstacles when not used correctly. Lane advises taking advantage of "warm" resources, such as an in-house accountant to assist with ROI or TCO analysis ("for free") or employees who can help document, scribe, and organize the project. "Be willing to ask around for help and see who has talents or interests that can help you achieve your goals of project success and on-time, on-budget deliverables," he says. Also, he says, don't focus so heavily on using tools that project management becomes more about administering the tools than working on the project.

Employing professional consultants and services is another option. Lane says consultants can offer a "SWAT team" approach to "sweep in, attack, clean up, and get out." A third party can also prevent having to interrupt the daily tasks employees or techs perform. "You get extra productivity, and

often, the cost analysis of a consultant is actually cheaper than trying to do it yourself," Lane says, particularly when you factor in overtime pay, loss of staff productivity, and other elements. Consultancy contracts should include documentation, staff training, and proper handoff methodology details and may add maintenance and warranty service options "for pennies on the dollar if you tried to do it yourself," Lane says.

✔ Be Balanced

Clive Longbottom, founder and service director at Quocirca, says TCO "focuses on costs" but "unfortunately, ROI is too amorphous for most people to be able to measure effectively."

He suggests a more balanced approach that involves determining a project's or product's total value proposition (TVP). This entails examining four areas and averaging their scores to get an indication of the true time to return on the investment.

The first area examines what the change will mean to individuals. Managers can quickly estimate the value to individuals by determining what impact the change will have on the time the individual spends on a task, amount of resources he'll need (more or less than before), and the scope of the task.

The second TVP area is examining what the change would mean to the organization (how will costs or risks change) and what value the project/product will bring the company (can the company sell more at the same or greater margin and can it bring the new product/service to market at a good enough margin).

The third area is what would happen if the company didn't implement the project/product but competitors did, and the fourth area is pinpointing what the expected financial impact is.

"If we take the processes and tasks as they are now and the processes and tasks as they will be after the change, are we looking at them being a lot more expensive, more expensive, about the same cost, cheaper, or a lot cheaper?," Longbottom says.

✔ Consider All Costs

Too often, Lane says, enterprises create TCO "using an apples to apples comparison of how much something costs vs. how much it will save."

There's some truth to the comparison, he says, but it's only a portion of the entire picture. Also consider nonstandard costs and how a new technology might enable growth potential or scalability that isn't possible otherwise.

"Factoring in the costs of attempting to scale existing vs. new technology can create a whole new area of TCO consideration," he says. Also factor in labor costs related to maintaining an existing system, increased security risks, and other "real considerations." Lane says risks and costs related to "negative press or PR if hacked or compromised can be a tipping point in the bottom-line cost analysis." ℗

✔ Don't Be A Lone Wolf

"Know what you know, and what you don't," says Ed Lane, regional account manager at Gillaspy Sales (805/386-1166; www.gillaspysales.com). Rather than take a "lone wolf" approach, he says, it's better to get there successfully and with help.

"Be willing to admit your shortcomings and even gaps in your knowledge or ability," he says. "That transparency will help you appear to have the project's best interests at heart and will help you in the successful completion of the project. Because, after all, the point is to get there—not go it alone and risk never arriving or getting lost."

✔ Cover All The Bases

Clive Longbottom, founder and service director at Quocirca, says attempts to pinpoint a new project or product's TCO often omit several important considerations, including what the new product/process can do for the business and what could occur if the business didn't implement the change but competitors did.

Using a total value proposition approach that address these concerns, as well as what the change will mean to individuals and the financial impact a change would have, can be "pretty simple and doesn't require deep dives into information that's probably not available to the person dealing with the issue," he says. Overall, he says, managers can "come up with something that forms the core of a proposal and a plan within a couple of hours."

BONUS TIPS:

✔ Don't Reinvent The Wheel

"Chances are, you're not the first organization to go through this issue or project," says Ed Lane, regional account manager at Gillaspy Sales (805/386-1166; www.gillaspysales.com). Rather than taking a "maverick'"approach to solving all issues and managing this project, learn from the experiences of others. Ask other companies how they handled situations, specifically pitfalls and regrets. Also, contact VARs and similar sales organizations, as they've likely seen numerous types of solutions in different companies and have valuable contacts and experience, he says.

✔ Don't Look Only At The TCO

Clive Longbottom, Quocirca founder and service director, cautions that TCO in itself can be "a complete waste of time." For example, he says, "say I come to you and say, 'I can implement a tablet for you at a cost of $100,000.' I'd expect your response to be, 'Ouch, that's high. No thanks.' Now, if I come to you and say the same but added 'and I guarantee that your bottom line will improve by $1,000,000 in 12 months purely due to this,' would your response be the same?" That's why you need to look at not just the costs but also the future benefits and returns.

Improve Endpoint Security

Enhance The Processes & Programs Used To Protect Laptops, Desktops & Other Devices

Protecting desktops, laptops, mobile devices, and other enterprise endpoints is a perpetual concern for data center and IT managers. Because of what's at stake if that protection is lacking and fails, safeguarding endpoints is also one of a manager's most vital tasks. Here is advice for enhancing endpoint security processes and programs to ensure they're as secure as possible.

Identify Problem Areas

Not having unified reporting and management systems in place is one common area where enterprises, particularly small to midsized ones, can fall short with their endpoint security. Enterprises that can gather and manage data arriving from multiple endpoint solutions generally have a better perspective on the state of their protection.

Bob Tarzey, analyst and director at Quocirca, says shortcomings for endpoint security resemble those of any other IT issue in that there's a lack of resources and skill to implement. This means most companies are behind the curve when it comes to putting measures in place for addressing BYOD, for example, as well as addressing related consequences for data protection.

Chris Hadnagy, who offers professional social engineering training and penetration testing at Social-Engineer, says for the most part, "smaller companies do not have a set security department," thus endpoint security is left to an IT group or "guy" already overworked. "In addition to their daily work of maintaining the network, keeping users happy, and installing machines, they have to learn, implement, and educate on security issues," he says.

"Due to that, a lot of what may be needed is not implemented."

Spot The Signs

Hadnagy says it can be difficult to identify telltale signs that endpoint security isn't up to snuff. "There is not one sign that flashes red when an SME is weak," he says. "It can be different things, but I look for the latest updates to vulnerable software such as PDF readers and browsers."

Next, he looks for what antivirus software is in use and "most importantly, what type of user education on security matters exists." Ultimately, Hadnagy advises small to midsized enterprises to road map their endpoint security. "This is not an easy set of tasks, so make a plan, map it out, and this will tell you when/where/if you need additional people and help," he says.

Key Points

- Endpoint security programs and processes can suffer from overworked IT groups lacking time and resources to implement security and maintain it.

- It can be worthwhile to outsource endpoint security or seek a trusted consultant to identify weaknesses and solutions.

- Employing a layered endpoint security approach can make it more difficult to execute attacks.

Tarzey says detecting shortcomings "from the outside" is difficult. One issue with smaller enterprises is they might not attract the attention of regulators until

something goes badly wrong. "For example, it would be almost unthinkable for a large enterprise not to have thought through PCI DSS, but many SMEs have not," he says. "If credit card data gets leaked by the SME, they may suddenly be noticed and could face not just the wrath of regulators but also, if interacting with larger businesses, a loss of their confidence or worse."

Ultimately, conducting a professional audit may be worthwhile. Also worthwhile can be regular audits to verify there's visibility into security systems and data, to identify valuable assets, identify systems and devices with network access, and determine the security on those systems and devices.

Secure In Layers

Jim O'Gorman, president of Offensive Security, a training and consultancy firm, says endpoint protection is just simply not done well—at all. "Organizations typically select a single tool, deploy it, and assume they are OK," he says. "Sometimes, these tools are really horrible, like antivirus, and do next to nothing to prevent attacks. Other times, the solution is actually pretty decent, like some of the whitelisting solutions that are starting to increase in popularity."

To prevent custom attacks from breaking endpoint security, he says, enterprises should deploy a layered security solution "that makes attacks harder to pull off." This entails products and "also just putting in the work and making sure that you configure your systems correctly by removing software that isn't needed, changing default configurations, and so on," he says. "You can't just buy some product and bypass putting in the effort."

O'Gorman also advises ensuring logging is present and being monitored. "Actually follow up on the logging; find problems as soon as they happen so you have a chance to contain them before they become too large of an issue," he says. "And finally, test. Make sure that your solution is working as planned in a simulated attack."

It's also important to determine how much risk is acceptable, O'Gorman says. Although enterprises can't eliminate all risk, they should determine "how much spend makes sense before you get to the point of diminished returns? You have to ask yourself this question before you start and at every step of the way," he says. Many businesses have a "very hard time with determining what risk is and how to measure it," thus "rose-colored glasses get put on, and people decide that 'everything must be fine' because they don't want to deal with it, or they just buy a lot of product figuring that they can spend their way out of the problem," he says.

The Long Haul

Long-term, Hadnagy says, consider investing in more people. "The work of educating even a small group of a few hundred users is not a small task. It takes time, effort, and manpower," he says. "Also, updates and upgrades are time- and manpower-intensive."

Quocirca's Tarzey says it's essential to keep up with "the threatscape, regulatory environment, technology, and user behavior." Find out what endpoints are accessing your systems, create a clear usage policy, communicate this to users, and enforce with technology where pragmatic, he says. P

Top Tips

✔ **Consider outsourcing.** Bob Tarzey, analyst and director at Quocirca, says small to midsized enterprises should consider outsourcing endpoint management, as "they are picking up on the need to manage heterogeneous endpoints and BYOD." Outsourcing doesn't mean they don't have to worry about protection, he says, but it does enable them to "focus on policy and get experts to implement it."

✔ **Secure the device or the data.** Tarzey says there are two basic approaches to user endpoint security. One is securing the device, which can be difficult, especially if the company doesn't own the device. The other is securing the use of data, which is "easier and can be done without too much effort on the device itself," he says.

✔ **Start with penetration testing.** Social-Engineer's Chris Hadnagy says he always recommends starting with a penetration test, or pen test. "The pen test tells you where you are weak and where you are strong. Once you know this, you can then plan out where to educate, where to enhance, and where to move."

Action Plan

■ Define what you must secure.

■ Determine what visibility you have into devices and data.

■ Identify valuable data and assets.

■ Determine systems and devices with network access.

■ Verify the security status of those systems and devices.

■ Pinpoint an acceptable risk level.

■ Implement security in layers.

■ Ensure logging and monitoring is in place.

　　■ Conduct regular penetration testing.

Get Started

For some enterprises, it's possible that getting started with enhancing their endpoint security programs will mean starting from scratch and implementing their initial solution or replacing an antiquated solution currently in place. Otherwise, costs can include those related to outsourcing security, hiring additional staff, conducting penetration testing, and hiring consultants.

Know Your Options For Cloud Storage

Analyze The Advantages & Drawbacks, Then Pick A Provider That Offers What You Need

THE CLOUD IS BECOMING an increasingly attractive destination for various enterprise storage purposes. An Aberdeen Research Group study, for example, cites the top benefits of cloud storage as better archiving, reduced need for on-premises storage devices, and the ability to focus on more strategic projects.

Gene Ruth, research director for storage at Gartner, says although it's important to not oversell cloud storage and to use caution, he's very positive about cloud storage. Beyond possessing considerable potential, he says, cloud storage has become a credible option for certain scenarios. Here are tips to help determine when cloud storage is a good fit and how to select the right provider.

✔ **Recognize The Benefits, Drawbacks & Trends**

"Cloud backup is not free," says Jason Buffington, data protection analyst at Enterprise Strategy Group. "A lot of SMBs, when they see the cost of cloud-based backup, get sticker shock." Enterprises should remember, however, they're not just gaining storage but management of that storage, he says. "You need to think of value and not price," he says.

Although an industry has formed around putting backup services in the cloud, putting primary data in the cloud using cloud storage gateway devices is one of the more interesting trends, Ruth says.

These gateways "look and feel like file servers" but actually put data in the cloud and possess large cache, encryption, WAN optimization, and deduplication and compression capabilities. "There's even some capability to run server virtualization using the cloud storage gateway as a storage device as long as the server virtualization doesn't get too big," he says.

On-premises, "it feels like you're running your files locally" but the provider handles backups and disaster protection, which simplifies the job for smaller IT organizations, he says. "For me, that's the big payoff for smaller companies using cloud storage, and all the technologies and all the products that make that happen are all evolving."

Beyond security, Ruth says, a serious drawback to cloud storage can be performance that isn't able to support given workloads. "To fend against that, it's important to do a proof of concept," he says. "Cloud is not a panacea . . . It definitely could have performance issues." Companies approaching petabyte data scales, he says, should question whether they'd "be better off building their own private cloud storage environment vs. public, particularly if it's pretty active data."

✔ **Look Beyond Provider Security**

Security and handing over maintenance of the company's data have long

been concerns of companies pondering the cloud. Thus, a provider's credibility is paramount. "Can you trust them to stay in business, to have the kind of data availability you're going to require to keep your business intact?," Ruth says. "We're now a couple years into it, and I think we're having pretty good results with the big providers; they're proving they can save data in a reliable fashion."

Security-wise, Ruth recommends companies look at what they're doing on-premises. "There are a lot of businesses that probably have no idea how to properly institute a secure environment and are exposed and don't even know it," he says. "These big cloud storage vendors live and die by providing good cloud security. Your own business probably doesn't have as good of security as the cloud provider."

✔ Get Your Value's Worth With Value-Added Services

Among larger vendors of cloud storage services, security protocols, total data copies kept, data center locations, and other basics are becoming more equalized, Ruth says. Now, the key differentiator is becoming the value-added services offered. Examples include providing database services and storage services at different price points, as well as partnerships the provider has. Many smaller businesses, he says, prefer obtaining a turnkey solution vs. piecing together necessary parts. "That's a very big positive, particularly for smaller IT organizations that simply just don't have the skills and the bandwidth to figure it all out."

When it comes to service and support, Buffington says better cloud providers offer the same quality of training and support as on-premises backup providers. Thus, enterprises should have high expectations where experience of deployment, skills, and knowledge building are concerned.

✔ Have An Exit Plan

Ruth says because there's the potential to move a lot of data to the cloud, take care to select a cloud computing provider because it has the potential to become a business partner for a long time due to the difficulty of moving data out.

But because things don't always work out with providers, "you need to have an exit plan" in case you must move data out, Ruth says. "Some service suppliers will let you load up physical equipment and FedEx it to you. Some won't. Some will charge for it. Some won't," Ruth says. "You'd have to build your infrastructure back onsite. How would you do that? Where would the money come from? Do you have a budget to do that? All of that needs to be considered." ℗

✔ Make Decisions Regarding Backups & Restores

Backing data up to the cloud is easy, says Jason Buffington, data protection analyst at Enterprise Strategy Group. "It's the restore that you need to pay attention to." The trick is determining "how quickly can I get it all back?," he says. Restoring a few files is simple, he says, but if you lose a server, "that's a whole bunch of data to pull back across the wire; it doesn't matter how fast your wire is, that's going to take you some time."

Buffington says one ideal backup/recovery model is having a local IT integrator that doubles as offsite backup provider. "When you lose a server, the first person you'll call is the guy who is going to bring you that new hardware. Wouldn't it be great if they already have an offsite copy of your data, so they could just bring that with them when they're bringing that new gear out?," he says. Currently, he says, there are backup providers that "only sell their backup service through the channel through service providers, and in many cases those service providers are also a local integrator."

✔ Consider The Economics

When "you start to move capabilities into the cloud, what's really happening is your economic model is becoming more flexible and you have the ability to decide whether you're going to be CAPEX-heavy or operating expense-heavy and be able to balance those things," says Gene Ruth, research director for storage at Gartner. When making decisions about the cloud, he says, involve the CFO to provide guidance whether it's more important to spend capital, spend OPEX, or "have the flexibility to fiddle back and forth."

After moving data to the cloud, conversations generally move toward, "'Well, our data is in the cloud, why don't we move our compute into the cloud?," Ruth says. He suggests developing a cloud strategy looking three to five years out. Not thinking ahead could result in ending up "with a poor provider that doesn't provide the added service values you want."

BONUS TIPS:

✔ Account For Bandwidth

Bandwidth is something all companies should consider before committing to cloud backup. For example, says Enterprise Strategy Group data protection analyst Jason Buffington, "if your WAN connection was already relatively busy, adding backup as a service will break it. You're going to start pushing a whole lot more data across your wire than you used to." Some cloud providers, he says, provide options tied to telcos so it's all part of one bill.

✔ Make Sure You Have Room To Grow

For most enterprises, it's often better to start off moving a small amount of data to the cloud and then increasing that amount as you become more comfortable with the process. Make sure your cloud provider can grow with you and understand any limits in place regarding how much data you can store and how many requests you can make.

Develop A Plan For Outdated Equipment

Here's How You Can Get Some Benefit From Equipment You No Longer Need

NEARLY EVERY ENTERPRISE has equipment that's outdated but still useful. Google serves as a prime example. Since 2007, the company states it has avoided purchasing more than 90,000 new replacement servers by remanufacturing and repurposing its outdated ones, using those for services that don't require high-end processing power. The result is a more efficient and environmentally friendly operation. Another possibility for some companies to deal with outdated but still useful equipment is working with a vendor that can repurpose or recycle it, a solution that can see the enterprise recouping some of its expenses.

First Things First

If you're looking to get rid of or repurpose old equipment, you first need a better understanding of what equipment you have and how it's being used.

"You should identify and know what equipment you have on hand, what's operational, and what's been abandoned or is under- or unused," says Brett Femrite, director of business development for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).

"You can't do much to get rid of unused equipment until you have completed a thorough audit and identified what can be removed." The inventory auditing process can be both tedious and time-consuming, as you'll want to check out all equipment, including fans, shelves, cables, and wires.

Know What To Reuse, What To Recycle

Darin Stahl, principal consulting analyst at Info-Tech Research Group, says the economic downturn and virtualization have caused enterprises to view their equipment differently.

"The refresh cycle on the equipment has gotten longer, so what that means is there's less available used equipment because they're hanging on to this stuff and wringing every ounce of usefulness out of it," he says.
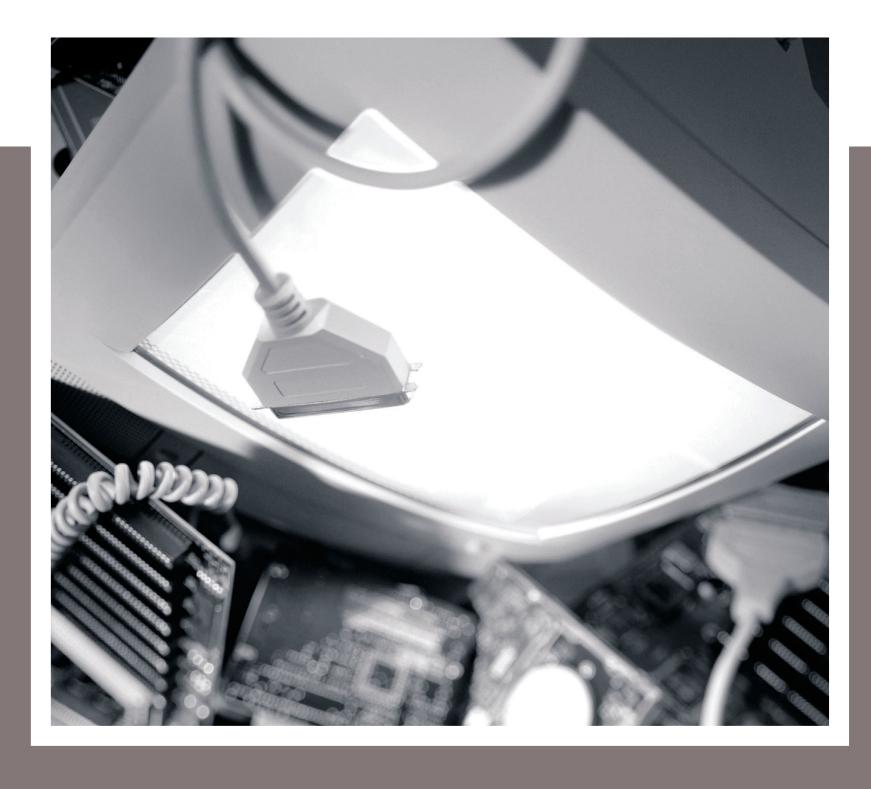
For example, the most common refresh point for servers is five years, but Stahl says 22% of his customers are pushing that to six-plus years. Less than 14%, he says, are refreshing servers at the three-year mark any longer.

UPSes, HVAC units, and other data center equipment were good candidates in the past for recycling and/or reuse, but companies now aren't typically refreshing these until the seven-year mark. In the past, Stahl says, this wasn't a big deal, but "what's gone on if you start looking at the efficiencies in a precision cooling system

Key Points

- Outdated data center equipment can be reused for testing environments, backup purposes, less intensive workloads, and other purposes.

- The economic downturn, virtualization, and improvements in efficiency have altered the refresh cycle of equipment.

- Reusing outdated equipment can save enterprises time in deploying new equipment and money in buying or renting equipment for non-critical workloads.

or an HVAC unit for a sever room that's five years old, that delta between what you bought five years ago or seven years ago is very dramatic. For me to go out as a buyer, the market just isn't there. Maybe I save some CAPEX, but I more than consume that in OPEX because of efficiency loss if I'm buying used gear." Still, he says, there's a healthy market for such used equipment as racking equipment, raised flooring, and generators.

Know Your Options
For Getting Rid Of Used Equipment

One of the most common methods for getting rid of used equipment is a fire sale, but many data centers will need to be aware of who they are selling to.

"A less time-consuming method is to sell to one of the many companies that exist by buying used servers and equipment and refurbishing them," Femrite says. "Bear in mind, often you will receive pennies on the dollar for this equipment, but normally the buyer will pay to pick it up and ship it to their facility and get it off your hands."

Another option is an asset recovery program, which is a service that performs both the IT asset buyback as well as the physical recycling of hardware. Such companies will take care of the entire process for you, including removing the equipment, destroying what's no longer useful, and recycling it. Such companies typically pay you money for the equipment and remove your environmental liability.

Some vendors will even create a fund for your organization so that the money you gain from selling used hardware can be used to purchase recertified equipment when you need new hardware.

Repair Or Replace?

A company that specializes in hardware repair or asset disposal may be able to tell you if it would make more economic sense to repair or reconfigure a given product, rather than destroy it or tear it apart for recycling. By maximizing the value of your equipment, an asset recovery service can also help to improve the green status of the company, because you are helping to make hardware sustainable for a longer period of time.

When seeking a company that will help with your asset disposal, "Look to work with companies with a reputable asset recovery or refurbishing program," Femrite says. "They can often provide help in determining the value and final disposition of your unused IT assets and offer a variety of options to suit your needs."

Know your needs when looking for an asset disposal partner. For example, a company where data security is mission-critical will want to go with a service that keeps detailed records of wiping, reset, degaussing, and destruction of your equipment.

Many hardware resellers and disposal services will provide you with a complete report down to the final destination of the equipment, whether it be a certificate of destruction or information about recycling activity, such as if it was dismantled into parts for other products. Some hardware disposal companies are even audited by independent auditors to ensure compliance. If you want to continually recycle or resell surplus hardware, you may want to look for a service that will set up an ongoing contract with you. P

Top Tips

✔ **Not so fast.** Any equipment embedding proprietary software, such as network or security appliances, isn't a good candidate for recouping expenses, says Info-Tech Research Group principal consulting analyst Darin Stahl. That equipment poses potential issues, including lack of manufacturer life cycle support and availability of patches and upgrades for the equipment.

✔ **Build goodwill.** Depending on the vendor, Stahl says, being able to demonstrate to executives who place reporting and green-related expectations on you that "you aren't just handing this stuff off to a landfill and it's being handled by a reputable, totally holistic asset-management company with recycling is a good thing." Beyond gaining credits within a reporting regime, he says, "you also buy a lot of goodwill."

✔ **Plan for outdated equipment.** From an IT perspective, dealing with outdated equipment should be part of overall disposition planning you do within a hardware asset-management program, Stahl says. Dealing with outdated equipment should "just be an outcome of your end-to-end hardware asset-management program, and just one of the disposition options. Plug it into the back end of that process and don't make it a one-time event or fire sale or yard sale every spring," he says.

Action Plan

■ Audit data center equipment and document all components.

■ Look for internal reuse options for current and future needs.

■ If selling equipment, seek bids from multiple qualified vendors.

■ Compare prices for selling vs. recycling.

■ Start small to ensure the vendor provides what is promised.

Get Started

When comparing vendors that handle outdated equipment, look for ones with end-to-end IT asset management approaches. Also, ask if a vendor can create a portfolio analysis, describe its valuation methodology, provide secure logistics, offer a chain of custody from start to end, and produce an ultimate disposition report. Also consider certified vendors that are EPA-compliant and seek colleagues' recommendations and look for vendors with several years of experience—ones that participate in tradeshows and industry events and that have received positive user reviews.

Security Certifications: A Look At Trends & Benefits

How Employees & Businesses Are Reaping Rewards From Advanced Training

MOST SECURITY EMPLOYEES go through some form of training to earn their jobs, and once they get those jobs, they continue to rack up experience until they become experts in a particular field.

But some of those same individuals like to take the extra step and earn a certification for a specific product or even an entire security discipline. There are many certifications that cover a variety of topics, which can be a benefit for employees and for the companies that hire them.

✔ Consider Employee & Company Benefits, Concerns

For employees, "the certification is the icing on the cake, and it really demonstrates that they've mastered that topic,"

says James McCloskey, senior research analyst at Info-Tech Research Group. Certified employees can also be trusted by the security team with certain functions, he says, and be able to use their training to make the IT department run more smoothly. If employees can focus their certifications on specific aspects of security, such as firewalls or penetration testing, then the team can work together more efficiently and share equally in the responsibility.

That doesn't mean there aren't potential loopholes, says Eric Ouellet, research vice president at Gartner. "We've all seen individuals outside of certifications where they're able to pass a test," he says. "It doesn't guarantee that the individual really knows anything about the test

they've passed, but there's at least a basic level of awareness." Although this and other issues can arise from dealing with certified employees, it doesn't mean you should avoid the process.

Another downside is the potential to lose employees with certifications, McCloskey says. "There is this impact for the organization where allowing your employees to certify may make them more mobile and therefore they could leave your organization. On the flipside, preventing them from certifying will almost certainly result in those organizations losing their employees. It's more than just a perk. It's a function of seeing that the organization supports the development and ongoing learning of their employees."

✔ Prepare For The Certification Process

There are two common approaches an employee can take when attempting to gain a security certification. One approach, which is particularly beneficial for companies, is to take an employee "who's demonstrated a lot of aptitude for a topic and has done a lot of independent work," count that as their necessary training, and then "pay for the certification attempt," McCloskey says. With this approach, companies can avoid paying for training or courses and instead pay for only the certification exam.

The other avenue, which is great for employees who want to learn as much as possible during the process, is to take

training offered by certifying bodies, such as (ISC)[2] or SANS, McCloskey says. Then, after they've gone through training, those employees can take the certification test with those ideas fresh in their minds.

Regardless of which option employees choose, they will need to take a test, which is why it's also important for them to review materials on their own time to prepare for the exam, Ouellet says.

"Generally speaking, what we'll see is that individuals will start to do some self-training, and that's always a big recommendation," he says. "That could be acquiring books, taking some courses online, or reading some of the various forms for each of these certifications. They're just getting familiar with the topic to the point where they feel confident enough that they can take the exam and pass to the level that's required."

✔ *Check For Recertification*

The security certification process doesn't end after you finish your exam. For many certifications, such as a Certified Information Systems Security Professional (CISSP), McCloskey says holders are "required to put in 40 hours of security continuing education every year in order to maintain that certification." Employees can earn those continuing education credits through activities done at their day jobs or even attending a conference where they're awarded a certain number of credits per session.

Ouellet says a few certifying bodies ask their members to go through part of the recertification process again every few years. "Some require you to physically recertify as part of an exam process, whereas others will grant you the ability to continue to hold your certification as long as you can provide some evidence that you're continuing in your education process," he says.

✔ *Consider Starting Small*

Some certifications aren't readily available to newer security employees. In fact, some certifications require years of experience as well as other precursor certifications. CISSP is an example of a certification that is "more of a demonstration of work that's been performed over several years," McCloskey says. You can't start a job at a company as an information security employee and expect to become CISSP certified immediately. Instead, you should focus on smaller, more focused certifications that could eventually lead to a broader picture that includes all of your previous certifications combined.

Ouellet says it really depends on where you are and what it is that you do. "If you're a security practitioner, then getting hands-on certifications for the tools that you use is really important. For example, if you're a firewall administrator, it would be a good idea for you to have firewall experience and certifications for the particular product you're responsible for supporting in your organization. Then you start looking at other certifications that are maybe a bit broader, generic, and don't necessarily talk about a specific product but instead cover a certain category of product." P

✔ *Seek Advice & Guidance*

Because the certification process can be costly to employees or sponsoring companies, it's important to get as much information as you can about security certifications ahead of time.

"I would strongly recommend that before investing one's own money in certification, talk to someone in the security field, make sure that you understand why you want to go get these certifications, and get that good advice," says James McCloskey, senior research analyst at Info-Tech Research Group. "As a security professional, it's in everyone's best interest in this hyper-connected society to have more people focused on security. The people in this certification field would be very willing to help a person who's looking to break into security to get the right path for them."

✔ *Plan Out A Career Path*

The key to making good use of a security certification is to plot out a long-term career path and make sure your training is leading you in the right direction. There are many certifications that require years of hands-on experience in addition to training and test taking, which means that you want to make sure the certifications you test for are stepping stones for future opportunities.

"Look at your background and where you want to go in terms of a career goal, and then chart out what might be required from a certification process," says Eric Ouellet, research vice president at Gartner. "You may have to get one certification before you go after another one. It's all about managing the learning process as you evolve and change roles within an organization. What might be really important when you're starting out to show your technical competence with a certain product maybe isn't as important when you make your way up to a leadership position."

BONUS TIPS:

✔ *Certifications Mean Higher Expectations*

Eric Ouellet, research vice president at Gartner, says that once you're certified, employers and co-workers will expect a certain level of understanding about products or technologies. "It's basically getting someone to the point where there's a common language that you can use with them around that certification," he says. It's important to not only continue learning for recertification purposes but also to keep up with your fellow certified employees.

✔ *Weigh Your Decision*

"Don't get certified just for its own sake," says James McCloskey, senior research analyst at Info-Tech Research Group. "If you're interested in learning, you can get the training in a lot of different forms and often for cheaper than if you go down the certification path. If you're going at it because you're interested in the topic, you can still get skills without necessarily getting certification."

Beware The Hazards Of IT Consolidation

Pitfalls To Avoid To Ensure Your Data Center Consolidation Project Goes Smoothly

ACROSS ALL TYPES OF INDUSTRIES, enterprises are executing data center consolidation projects with the aim of realizing any number of benefits, including cutting costs, obtaining increased efficiency, and lessening overall complexity.

But data center consolidation projects can also represent one of the most involved and difficult tasks IT and data center managers will undertake. A big reason for this is that the journey toward consolidation can be littered with various pitfalls that, if not avoided, can negatively impact operations in many ways, including actually decreasing performance and evaporating the savings the enterprise had projected. The following details some of the pitfalls to steer clear of and advice for doing so.

✔ **Validate First**

One of the challenges of a data center consolidation project is bringing together all concerned parties. Representatives from utilities, IT, lines of business, management, and human resources need to unite to properly plan not only the consolidation process but also address post-consolidation occurrences that may surface. Such issues can include documenting and planning for possible capacity and performance issues. Unforeseen issues because of poor planning could, for example, result in failing to meet performance levels and, in turn, falling short of SLAs.

The biggest challenge of any IT consolidation project, says Michael Brandenburg,

industry analyst with Frost & Sullivan, is making sure that on the front end "consolidation is being done for the right reasons and aligns with the business processes and applications being consolidated."

Brandenburg says that although reducing the enterprise's server footprint in branch locations may make financial sense from an IT standpoint, for example, the organization must possess an understanding of the risks that such a move may have on branch operations before any consolidation project moves forward.

✔ **Prioritize & Rationalize**

As part of the consolidation project, you need to prioritize workloads early on, says Clive Longbottom, founder and service

director at Quocirca. This ensures that IT, data center managers, and other enterprise personnel follow appropriate steps and guidelines when carrying out a consolidation project. Additionally, Longbottom suggests rationalizing application versions where possible to "see if workloads can be consolidated across software installations." Overall, he suggests virtualizing hardware and moving workloads onto a virtualized platform.

"Figure out which workloads can be shared and which you are happy to run in a shared environment," he says. "Create an elastic, virtualized platform (private cloud), and move workloads that can be shared onto there." At each stage of the process, Longbottom says,

ensure that the facility can deal with the higher densities that are required for cooling and power distribution. Additionally, "at each stage, make sure that the design for the physical underpinning can meet peak consolidated workload resource requirements."

✔ Acknowledge The Risks

Many experts caution that paring down data center resources can actually increase risks if not done correctly. Brandenburg says "by their very nature, IT consolidation projects risk creating single points of failure within the IT infrastructure. If through consolidation, IT services are migrated to a single data center, what happens if there is an outage at that data center or its network links?" Brandenburg says failing to identify the potential risks of consolidation, particularly in terms of how the consolidation can impact the organization's end users, "is the most significant consequence."

Ensuring frequent communication among interested parties can help lessen many risks while making consolidation a smoother, more finely managed process. For example, data center managers haven't historically been privy to energy-related bills and energy consumption data, so they may not be as focused on making energy efficiency a priority as those who pay the utilities and other bills.

Brandenburg says the "common theme of 'aligning IT with business' starts with communication." IT, he says, must actively communicate with line-of-business leaders in order to make certain they understand how consolidation could possibly affect operations. IT should also solicit feedback from stakeholders, he says.

✔ Watch For Greater Densities

One pitfall that could crop up during a consolidation project is failing to fully anticipate and plan for the challenges or the impact that the new consolidated environment's physical traits may create.

Poor energy-consumption planning, for example, could lead to higher energy bills than anticipated. Longbottom says, "Consolidation means doing more with less. This can lead to greater equipment densities that then require better cooling systems." This in turn could lead to greater dependencies on the underlying physical systems, he says, "such that the failure of one single physical item can impact many different systems sitting on the platform."

If the enterprise lacks suitable monitoring capabilities, Longbottom says, the result can be resources running out more rapidly where they are shared and multiple cyclical workloads all requiring the resources at the same time.

"Everything needs to be planned very carefully, and systems management and monitoring, along with workload management, has to be done very effectively," he says. P

✔ Look Beyond What's Technical

"Above all else, step away from the technology challenges that consolidation represents and determine the impact on the end users that could be impacted by consolidation," says Frost & Sullivan industry analyst Michael Brandenburg. "Similarly, go into every project, especially consolidation projects, with an eye toward disaster recovery and business continuation."

Prior to "putting all of your eggs in one basket," Brandenburg says, you need to ask questions such as what happens if a server, network, or data center fails and what are the failback options? "Finally, beyond assessing risk, understanding the impact to application performance and communicating that impact throughout the organization will set the proper expectations," he says.

✔ Seek An Expert's Guidance

Some enterprises are just now undertaking their first consolidation move. Depending on the given situation, the particulars surrounding the actual consolidation can be large in scope.

Beyond lacking the experience to fully anticipate every fine detail that can be involved in the consolidation, some enterprises may simply lack the resources needed to successfully pull the move off, particularly on time and under budget. For such reasons, enterprises should give serious consideration to seeking guidance and resources from a qualified and trusted provider or partner that possesses the ability to help plan and execute the move before, during, and after consolidation.

BONUS TIPS:

✔ Strike A Balance

The priorities of IT managers, says Frost & Sullivan industry analyst Michael Brandenburg, are frequently at odds with each other, such as lowering costs while maintaining the same level of performance and uptime. Although consolidation can produce cost efficiencies, he says, it may negatively affect the needs of the users IT supports. "Striking a balance between these disparate goals may mean limiting consolidation to the applications and processes that can truly support it with minimal impact to the end user," he says.

✔ Know Your Situation

One roadblock many enterprises ultimately hit where consolidation is concerned is lacking detailed information and acute insight regarding their present-day operations. Without knowing how the data center currently stands, accurately planning for future needs can be exceedingly difficult. A reality some enterprises eventually run up against is not obtaining the consolidation-related gains they had hoped to achieve and paying more in costs than they anticipated. Interruptions to uptime can also result from poor current self-awareness.

BUYING TIPS:

Data Center Furniture

FURNITURE IS THE REAL BACKBONE of your data center. That's why purchasing furniture that matches your needs is essential. Here's what to keep in mind.

✔ Know Your Company

The furniture you choose depends on the services your company provides. "Some companies need conference room furniture for secure and private consultations, and others, such as network centers, might utilize server cabinets or colocation cabinets and racks," says Susan Wynne, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net)

✔ Research Available Vendors

A solid data center furniture vendor will have a long track record of providing high-quality products and services. That ensures you can view it as a partner and work with the company for years to come. "You want a vendor that you can invest in for the future," says Eli Hertz, CEO and president of Hergo (888/222-7270; www.hergo.com). "You don't want to deal with a company that will only be around for a one-time purchase."

Also, be sure to research all of your available options. "Look for a reputable company with knowledgeable sales staff and one with short lead times," Wynne says. She also recommends spending more money upfront on quality products from a long-standing vendor. "The initial investment may be more than you wanted to spend, [but] the furniture will stand the test of time."

✔ Check For Quality

Once your budget is established, you can get the best value for the dollars you spend by looking for the best materials for your price range. For example, the frame makes a big difference in a piece of furniture's durability. Especially for desks, a steel frame with cross supports is going to be the most durable model. As for surfaces, high-density laminate and high-density pressboard are good choices.

✔ Make Sure It Fits The Space

Before buying furniture, first do some planning, Wynne says. "Know the function of the room. Have in mind a design or layout of the space you're wanting to create. A sketch or draft of the room with the various components in place is helpful," she says.

Know the dimensions of the space and furniture to ensure you meet requirements. Also helpful is knowing how a workstation will be used and by how many people to ensure overall comfort. Be sure to note whether the surface of the furniture has a lip of some kind that makes it wider at the top than at the bottom, and don't forget to leave space for drawers to pull out in cabinets or for people to work in front of the furniture.

Marking the space with tape can show you how much space the furniture takes up as well as what kind of walking space will be left over once it's there. If you prefer not to do it yourself, many furniture vendors offer design templates or free space planning.

✔ Use Your Space Efficiently

You can save money without sacrificing quality by making sure you are using space efficiently. One way to do this is to go vertical rather than horizontal, possibly by investing in pieces of furniture that are wall-mountable. "Office and lab space is at a premium," says Kristen Speranza-Diamond, vice president at Hergo. "It's beneficial to go vertical and make the best use of square footage."

Speranza-Diamond says that most necessary pieces of furniture and equipment for data centers are becoming less expensive, "so everyone is upgrading and making the transition to go compact." Manufacturers are putting more advanced technology into smaller packages, which will help you put more equipment into each piece of furniture.

✔ Focus On The Future

Be sure to look for key features, such as height adjustment for chairs or cable management systems for racks. If you invest in modular furniture with swappable pieces, you'll have room for future growth, Wynne says.

Choose furniture that will have a long life span. "You have to know that your current furniture will still be available in six or 12 months should you wish to duplicate or expand," Wynne says. ℗

KEY TERMS

adjustable height
Refers to components users can raise or lower for a better individual fit. Some higher-end furniture can be adjusted electronically.

cable management
Built-in grommets, channels, or other features to manage cables and wiring.

modular
Furniture components that are interchangeable or can be easily modified.

BUYERS' CHECKLIST

✔ **Seek out quality.** Although looking for deals can help companies on a tight budget, sacrificing quality as a result can end up costing companies more in the long term, especially if buying from vendors that don't offer lifetime warranties on furniture.

✔ **Know the delivery terms.** Determine if the delivery includes bringing it inside the facility, requires a lift gate or loading dock, and includes assembly or puts the responsibility on you or a third-party installer.

✔ **Go modular when possible.** Buying components that are interchangeable lets you modify the setup to meet changing needs, including downsizing or expanding space. Increasingly, individual furniture units can be mixed and matched and layout configurations easily altered.

✔ **Build vertically.** Purchase components that support building vertically for better space efficiency.

BUYING TIPS:

Colocation Providers

WHEN SELECTING A COLOCATION provider, it's crucial to get it right the first time, says Darin Stahl, Info-Tech Research Group lead analyst. "When you get into a colocation, switching costs are enormous," he says. "This isn't like buying a bunch of photocopiers, being unhappy with them, and putting them to the curb and getting new [copiers] in. It's a big deal to go through switching." To find a good fit with a colocation provider, consider the following.

✔ Understand The Options

Stahl says the colocation/managed service providers market can be categorized into three tiers. Tier one vendors typically have significant market influence and enormous geographic scale, he says. Tier two vendors generally have the same qualifications but less market influence and possibly less geographic scale. Tier three vendors are basically everyone else, he says.

Although price is a factor when comparing providers, it shouldn't be the driving factor. Smaller colocation providers that compete on price and don't own their facility typically can't offer an iron-clad SLA around the actual facility, Stahl says.

Lynda Stadtmueller, program director for cloud computing services at Frost & Sullivan's Stratecast division, agrees, adding, "There's too much at stake . . . to go low bid." Colocation, she says, "is not a commodity; every provider has different configurations, capacity, processes, and systems that can seriously impact your applications."

✔ Consider Usage & Location

Be sure to consider how you want to use the facility and for what purpose. Some companies invest in colocation so they can cut down on internal data center and infrastructure costs while others hope to set up a safe solution for disaster recovery. Once you know how you intend to use equipment in your colocation environment, you can then find the best location.

✔ Make Sure There Is Room For Growth & Expansion

Although it's important to put a heavy focus on what your company needs now in terms of equipment and performance, it's also crucial to look to your company's potential future needs and ensure there is enough room for expansion years down the road. Instead of backing yourself into a corner, make sure your colocation provider's facility is flexible enough to support more or less equipment depending on whether you wish to expand or consolidate at a later date.

✔ Know The Reputation Of Your Provider & Its Facility

Checking a colocation provider's past history is as important as making sure it's in a safe location, if not more so. Request customer referrals whenever possible and gather as much information as you can about the provider before you make your decision.

✔ Check The SLA

"Be sure to compare the SLA to the services you are planning to use," advises Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "Some SLAs have varying levels of coverage based on the services that you choose. Be sure to note whether there is a redundant service offering that you must opt in to use in order to be fully covered by the SLA. Examples include A/B power or redundant network connections."

Stahl says to push for the contract to include an annual services review and ability to right-size or contract services so you don't pay for, say, server space you don't need. Some of the best vendors do this upfront, he says, while others will with a push and some not at all. Conduct a quarterly operations-style meeting with the vendor to discuss what you did in the space during that time, what worked and didn't, and what you have planned. Ask the vendor to do likewise, which may result in learning the vendor's scheduled outages. P

BUYERS' CHECKLIST

✔ Who owns the colocation facility?

✔ What are your short- and long-term plans for the facility?

✔ What options are in place for potential company growth and expansion?

✔ How much power and space do you need?

✔ Does the facility offer 24/7/365 customer service?

KEY TERMS

cabinets, cages, and suites
Terms used to describe how much space a company needs for its colocation resources. Cabinets are for companies that only need a small amount of space; suites, vaults, or rooms are required for larger-scale colocation needs.

geographic risk mitigation
The practice of selecting a colocation provider and facility based on the location of its data center. For instance, choosing a data center located in a region with a calmer climate vs. one located in a region that's prone to hurricanes, earthquakes, or other natural disasters.

BUYING TIPS:

Data Center Racks & Cabinets

RACKS AND CABINETS hold and protect every piece of equipment that runs your data center, so don't rush the decision about which cabinet to purchase. Instead, focus on the most important features and ensure the cabinet will fulfill your needs for years to come.

✔ Know What's On The Market

Start by researching what's on the market. There are full-sized, midsized, and smaller cabinets as well as racks with heights of 30 to 84 inches and widths of 24 to 36 inches.

Eli E. Hertz, CEO and president of Hergo (888/222-7270; www.hergo.com), says to look for potential add-on items, such as overhead storage compartments, power and cable management solutions, and back and side panels. Different sized racks and cabinets paired with additional solutions can help you design a product that's perfect for your data center.

✔ Pinpoint Your Needs

"Establish what you need the cabinet to do," says Susan Wynne, senior sourcing specialist for Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). "If the equipment is noisy, you may want a sound reduction cabinet. If the environment is dirty, you may need a filtered cabinet. Even the area of the country is important, and you may need an air-conditioned or NEBS cabinet."

Other considerations include whether you have a sprinkler-based fire suppression system that requires NEMA 12 certified cabinets that keep out moisture, Wynne says. You should also consider built-in security measures, such as locked cages or other alternatives, if there is a lot of traffic into and out of your data center.

✔ Pay Attention To TCO

Don't treat racks and cabinets like a commodity, says Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; www.siemon.com).

"Some companies get commodity-grade cabinets 'free' or at a reduced cost as part of other purchases, and while this may sound attractive up-front, sometimes you get exactly what you pay for." The commodity cabinet may be less expensive than a full-featured cabinet, she says, but the TCO often changes when you have to spend time troubleshooting the commodity cabinet or making costly adjustments to support the cable plant.

✔ Research The Vendor

The decision of which vendor to buy from is significant, Hertz says. Companies should be able to "grill the supplier on what they are actually going to be getting." The vendor should know "the product from nuts to bolts."

✔ Get The Right Fit

In most cases, you've decided which pieces of equipment to buy for your data center before you start shopping for the racks and cabinets to store them in. It's a great opportunity to measure each piece and come up with a mock configuration for how it will fit into the rack or cabinet. "This ensures the cabinet is tall enough, wide enough, and deep enough to handle the longest piece of equipment to be populated into the cabinet," Wynne says.

But be careful you don't populate the racks or cabinets with more equipment than you can reasonably concentrate in one area, says Ken Koty, sales engineer at PDU Cables (866/631-4238; www.pducables.com). A higher density of equipment creates more heat and possible hot spots. "Make sure your cooling equipment can adequately cool the equipment before you put it all in one spot."

The amount of space the rack or cabinet takes up is equally important. "Make sure the outside dimensions of the cabinet will fit in the designated location," Wynne says. Leave adequate space for future expansion. If you don't, you could get stuck with a cramped and inefficient data center with no room for evolution.

✔ Check For Airflow

If you are utilizing raised floors and CRAC units, having vents or grills to allow airflow through the structure is essential, Koty says. "Look for server cabinets that provide good ventilation. Make sure that the cabinets draw cold air from the front and discharge in the back to enable a hot/cold-aisle configuration."

Higbie says many companies are getting away from smaller 24-inch cabinets in favor of wider cabinets with better pathways for cabling and more capabilities for airflow.

To ensure the cabinet has adequate airflow, she says, you'll need to know the power needed for each cabinet to help decide the amount of equipment that will go in that cabinet. P

BUYERS' CHECKLIST

✔ Is cable management built-in, or does the rack or cabinet leave adequate space to neatly route cables?

✔ Does the rack/cabinet provide PDU mounting options such as brackets?

✔ Does the equipment you're mounting require tapped or M6 holes?

✔ Will you need to disassemble the rack/cabinet to get it in the room?

✔ Is the cabinet lockable to prevent potential security issues?
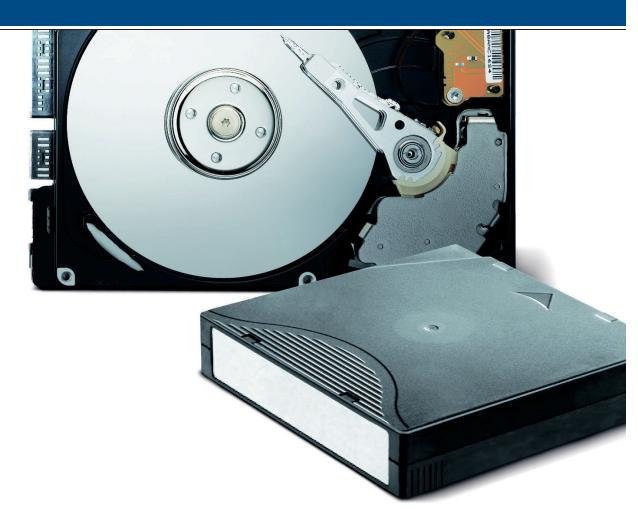

KEY TERMS

M6 holes
Square holes common with rackmount equipment and server cabinets; they can be adjusted to a round hole with a cage nut.

rackmount unit (RMU)
Cabinets and racks are measured in rackmount units, with each RMU, or U, equivalent to 1.75 inches.

Buying Tips:

Storage

You spend a lot of money on storage, and you need to make sure every dollar you spend is a good investment. With so many options available, including cloud, in-house, or some combination of both, it's more important that ever to have a solid understanding of what's available and what's most important for your enterprise.

✔ Do Your Homework & Know Your Goals

When narrowing your storage options, careful research is invaluable. "Do your homework, but don't over-analyze," says George Crump, senior analyst at Storage Switzerland. Crump suggests discussing your project with one systems vendor, one new-but-established vendor focused on the mid-range, and one startup.

Crump says you should have a clear goal. "Do [you] need more capacity, more performance, better data protection, [or] some or all of the above?," he asks. Be clear about your company's business requirements, business strategy, and networking strategy, including bandwidth requirements and available facilities and services.

Greg Schulz, senior advisor at Server and StorageIO Group, recommends stepping back from comparing tools and technologies initially and instead reviewing service-level objectives and requirements, including RTO and RPO. Also be sure to give serious thought to how much of the new storage could be in the cloud, whether public (third-party) or private (in-house).

✔ Inventory Your Data

Have a clear understanding of your data and requirements. Inventory the type of data you have today—how much is in databases, email, files, and other formats. Crump says a good set of storage analysis tools can help you evaluate how you're currently using your IT resources.

✔ Spend What's Needed

Storage can be expensive, but you get what you pay for. "While everyone wants to spend pennies to save dollars, real data protection may cost dimes, not pennies—but you'll still be saving dollars," says Jason Buffington, senior analyst with Enterprise Strategy Group.

Often, management may underestimate the financial impact downtime or lost data has until it's too late, he says. "In today's market, that may mean losing a key client or potentially being unable keep the doors open just because you can't get your data back," he says.

✔ Consider Outsourcing Storage Management

Mike Karp, vice president and principal analyst at Ptak, Noel, and Associates, says for small to midsized enterprises, most often the best option is outsourcing storage management, particularly where getting the most out of your storage and doing it with the greatest efficiency is concerned.

"Third-party providers often have a huge competitive advantage when it comes to providing storage services, and if an IT manager can make a good business case for outsourcing many of the storage responsibilities . . . they can spend more time doing the things that they do best and offload the things that they can't do with greater efficiency to somebody who can do them in a cost-effective manner." ▣

Buyers' Checklist

Here are some things to keep in mind as you formulate your storage strategy:

✔ **Data safety.** Keeping your precious data safe is vital to profitability, so be sure to implement redundancy and strong error correction, as applicable.

✔ **Uptime.** You need reliable devices and software, along with failover protection (both emergency power and redundant data storage systems). You'll also need support from the vendors, relevant manufacturers, and/or developers.

✔ **Security.** Consider all elements, including user access policy, encryption, firewalling, and malware prevention.

✔ **Speed.** How fast your storage works is important. SSDs will have a role in most data centers.

✔ **Manageability.** Your organization may require new software for storage management, data protection, support, and future storage planning.

✔ **Cost-effectiveness.** Think not only in terms of cost per gigabyte, but also cost per IOPS. Deduplication, virtualization, and provisioning features can help you avoid wasting money and power on unnecessary drives.

✔ **Scalability.** Whichever path you take, make sure the result will let your data center grow with your organization's needs.

Key Terms

cloud storage
Storage that takes advantage of offsite, third-party providers that maintain and manage the physical storage devices.

solid-state drive (SSD)
Data storage with no moving parts; it uses solid-state memory, or microchips, to store data, making data retrieval faster.

BUYING TIPS:

Environmental Monitoring Equipment

ENVIRONMENTAL MONITORING offerings are not things an enterprise invests in on a whim. Every organization has unique infrastructure limitations, climate issues, and monitoring needs, so there's no one-size-fits-all solution. Here's what to look for.

✔ Define Your Needs & Threats

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net), says you need to know what types of threats might occur. "The most common environmental risk is excessive heat within the cabinets, so you'll definitely want to make sure you are monitoring temperature," she says. Other potential environmental dangers include power surges/loss of power, humidity, smoke, airflow, and room/cabinet entry.

"Know thy facility," says Michael Sigourney, senior product specialist at AVTECH (888/220-6700; www.avtech.com). "The first thing an IT or facilities manager needs to consider and create is an understanding of the basic layout and elements, both structure and equipment, within their facility. Knowing where threats are likely to occur or have occurred in the past is key to planning success."

Water and leak detection can be easy to neglect. Chris Pullen, president of RLE Technologies (800/518-1519; www.rletech.com), says that, while power failure is the No. 1 cause of downtime, water is the second and can often be the overall cause of a power failure. He says you need to install leak detection throughout your facility. "Don't forget to look above the ceiling. What's on the floors above your data center? Look outside the box."
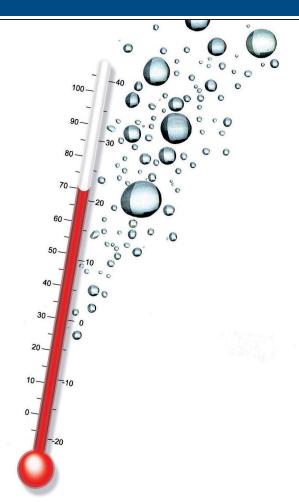
✔ Understand The Options

With so many choices, it's tough to know where to start. Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; www.temperaturealert.com), says ease of use and reliability are the two most important features to look for. "Choose a product that provides just the features you need, and this will ensure you're getting something that will be intuitive to set up," he says.

When it comes to connecting monitoring equipment to the network so that it can send alerts, several options exist, Schechter says. USB, Wi-Fi, and Ethernet remain popular, but there are also newer infrastructure-independent devices based on cellular phone connections.

✔ Install & Monitor

An environmental monitoring system is nothing without notifications. "The primary motivation for adding an environmental monitoring system is to know when you have a problem as soon as possible," says Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; www.sensaphone.com). Common notification options include email, LEDs, audible alarms, beacons, sirens, Web alerts, SNMP, automated phone calls, and SMS.

To avoid false alarms, let the monitor run for a few hours after installation so you can see the natural cycle of temperature and other sensors, Schechter says. Once you have a chance to review what a "normal" reading looks like, you can set an appropriate high/low threshold.

✔ Ensure Ample Coverage

Consider the room size and amount of equipment to be monitored and plan the number and placement of sensors accordingly. "If your deployment is small, a few points of measurement may suffice, but if you have a large operation, you may require environmental measurements every few feet," says Brandon Siri, senior marketing representative at Server Technology (800/835-1515; www.servertech.com).

✔ Get All You Need

Be sure you get all the components to complete the system, Viars says. "Most systems have a main console, and in addition to that, you'll need to purchase various sensors based on what you are looking to monitor specifically." Some sensors might require a power source, so consider that when planning your layout.

Sigourney adds that the best solutions include software. "This prevents wasted time trying to get hardware and software from two vendors working together."

✔ Consider Long-Term Support

Choosing the right solution means little if you don't have long-term support, Sigourney says. "Look beyond the checklist and make sure that you're getting future enhancements, that you have access to support, and that the company stands behind its products." P

BUYERS' CHECKLIST

Gina Dickson, director of infrastructure products at Black Box (877/877-2269; www.blackbox.com) offers this list of important features to look for:

✔ What conditions can be monitored (temperature, humidity, power, etc.)?

✔ Are the sensors wireless or wired? How they will be installed?

✔ What kind of reporting is available from the system? Can data be stored and exported for trending and analysis?

✔ What types of alerts and notifications can the system produce?

✔ How easy is it to configure and operate the system?

KEY TERMS

dry contact
Refers to an electrical contact that has no internally available voltage.

gateway
Receives information from sensors and can provide alarm/alerting functions.

sensors
The wired or wireless devices that measure and report environmental conditions to the gateway.

BUYING TIPS:

DCIM Solutions

DATA CENTER MANAGERS are eyeing DCIM (data center infrastructure management) solutions for the numerous benefits they can offer by providing a holistic view of data center and facilities infrastructures. Here are some of the key elements to consider when purchasing a solution.

✔ Know What DCIM Can Do For Your Data Center

DCIM solutions enable IT to view real-time power and temperature usage data on a granular level and provide monitoring, management, automation, optimization, and capacity and budget planning capabilities, all of which lead to the streamlining of operations and improving energy consumption and overall efficiency. Along with that real-time, holistic view into power, cooling, and other IT and physical assets, you'll get documentation, control, visibility, and metrics tools all in one solution.
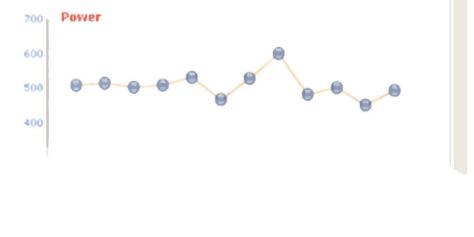
DCIM solutions can replace spreadsheets, paper records, CAD drawings, and similar tools traditionally used to track assets. You'll gain real-time, in-depth views into physical and IT assets because, with DCIM, you'll have a firm understanding of where your infrastructure assets exist and where spare capacity exists.

Other benefits include quick completion of company-required changes; the ability to receive complete capacity data for power, rack units, cooling, chassis, and network capacity consolidated into one system; less downtime; and precise views of capacity, trend, and environmental data for everyone to access.

✔ Find The Right Product To Meet Your Needs

When comparing DCIM solutions, be sure to consider what your greatest need is and your ability to fully use the platform's tools. For example, determine whether you have the resources in place to address issues the DCIM solution uncovers and change the facility or operating procedures to enable improvements.

The maturing of the DCIM market means there are products suitable for even small enterprises. When evaluating vendors, look for ones that have forged strong links with the leading enterprise IT management vendors. In some cases, your existing power vendors may offer solutions. This would be a good starting point as you already trust them as vendors.

Don't forget that, with whatever DCIM application you choose, you need to have the infrastructure support to run and maintain the application, says Alex North, director of business development at BayTech (800/523-2702; www.baytech.net).

✔ Seek An Easy Migration

Rather than re-creating the wheel, seek out a DCIM solution that supports easily migrating existing data to the new system, says Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net). For example, if you're maintaining multiple spreadsheets, CAD drawings, and other diagrams, he says, "migrating that information into the DCIM solution easily will be a lifesaver."

The solution should allow data center managers to start small and work up to added levels of sophistication in phases, he says. "Flexibility can breed complexity, and while a full-featured DCIM solution can seem complicated, getting started doesn't have to be." A modular solution that enables initially buying what's needed and layering in additional features gradually is a nice benefit. **P**

BUYERS' CHECKLIST

- ✔ **Plan for the future.** A DCIM solution should support capacity and optimization planning, offering tools that help "determine future requirements for power, cooling, floor space, rack space, and contingency planning," says Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; www.rackmountsolutions.net).

- ✔ **Know what you're up against.** Possible obstacles to acquiring a DCIM solution can include the company's finance department vetoing the purchase; departments having different solutions in mind, leading to paralysis; vendors not providing a solution priced for the small to midsized enterprise; lack of manpower needed to learn, implement, and oversee the solution; and poor or slow solution support. Before investing in DCIM, know how you'll handle these obstacles.

KEY TERMS

Corporate Average Data center Efficiency (CADE) and Power to Performance Effectiveness (PPE)
Two rating systems, created by McKinsey and Gartner, that go beyond power usage effectiveness (PUE) and account for IT energy efficiency. Both systems are designed to help IT managers address low server utilization, which is the biggest source of waste in data centers today.

point solutions
Many DCIM vendors offer only one or two DCIM components, or points, rather than an entire suite of DCIM tools.

Buying Tips:

Tape Media: Buying Used & Disposing Of Old

Buying and disposing of tape media is a complicated process. Because countless companies get rid of media that still has usable life, the market for used tape media is strong. On the other end of the spectrum, though, there are several issues you need to consider when disposing of your old media. Here are tips you can use whether you're interested in buying or disposing of tape media—or doing both.

✔ Get Past The Fear Of Buying Used Tape Media

Tape manufacturers work hard to convince their customers not to buy used tape, but used tape vendors say that those warnings are nothing more than fear mongering designed to increase manufacturers' sales. Most tapes are designed to withstand thousands of mounts in a tape drive. However, many tapes are written to just once and then sit on a shelf for years before companies are ready to dispose of them. These cartridges have a lot of useful life left.

✔ Always Follow Good Tape-Handling Procedures

Certified used tape can be used for the same applications as new tape, and it doesn't require any special handling procedures. However, you should treat it with the same care that you would treat new media.

Tape manufacturers and resellers recommend that you store tapes vertically and never take apart the cartridges or touch the media with your bare fingers. In addition, you should avoid dropping the tapes and keep them away from magnetic devices, including monitors, speakers, electrical motors, and power supplies. You also shouldn't let your tapes get too cold or too hot, and when you move them from one place to another, you should wait 24 hours to let them adjust to the climate conditions before mounting the tapes.

✔ Evaluate Your Data Destruction Options

When getting rid of old tape media, you'll choose between an onsite or offsite service. With an onsite data destruction service, you'll remove the need to deal with chain of custody documentation, which can become a legal burden and add complexity to the job. For data centers that store a lot of sensitive data and want to physically destroy the data, you'll enjoy the peace of mind that comes with watching the destruction take place. With an onsite data destruction service, the vendor will provide all the equipment necessary to handle your storage equipment.

Some data destruction services offer more powerful shredders at their facilities than mobile shredder services can offer. So if you want absolute destruction that's beyond any type of recovery, choose an offsite data destruction service.

A number of offsite data destruction services also double as a reprocessing center that can remarket the parts, so you can get some return value for your used equipment.

✔ Partner With A Data Destruction Service

Qualified IT asset disposal vendors will assist your company and take over the responsibility for certification and compliance. Some of the current data compliance standards include those from the Department of Defense (DoD), National Security Agency (NSA), and National Institute of Standards and Technology (NIST).
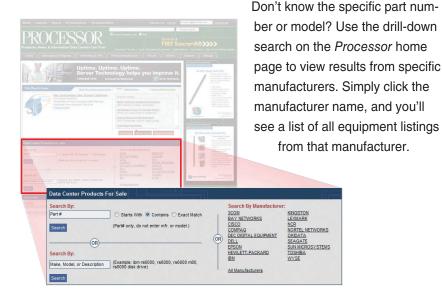
Most data destruction services also provide you with nondisclosure, confidentiality agreements so you can ensure that your data will be dealt with securely. These agreements can be an important part of your overall security policy.

Another benefit of a data destruction service is that it can provide you with a variety of options for handling your various types of storage media. For example, let's say that you want to shred a bunch of old tape drives, CDs, and mobile phones, but you want to merely wipe the data off old hard drives so that they can be reused in other parts of your data center or donated to worthy causes. Most data destruction services offer you a combination of degaussing and shredding services in both onsite and offsite variations. ▣

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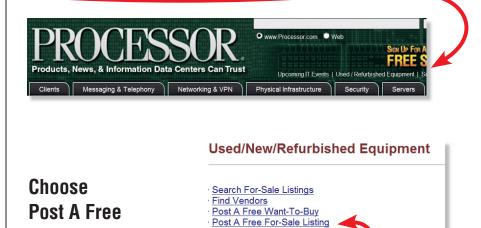
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Don't know the specific part number or model? Use the drill-down search on the *Processor* home page to view results from specific manufacturers. Simply click the manufacturer name, and you'll see a list of all equipment listings from that manufacturer.

Do you have excess equipment?
Post it for sale on Processor.com!

On the Processor.com home page, click Used/Refurbished Equipment.

**Choose
Post A Free
For-Sale Listing.**

Follow the on-screen directions from there!

PROCESSOR.

Network With Your Peers
At These IT Training & Association Meetings
Across The United States

JUNE

AITP Wheeling Joint Meeting With AITP Pittsburgh

June 17

www.aitp-wheeling.org

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AITP Southwest Missouri

June 18

High Street Baptist Church

900 N. Eastgate Ave.

Springfield, Mo.

aitpspringfield.org/main.html

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SharePoint 2010 SharePoint Designer

June 20

New Horizons Tysons Corner

2010 Corporate Ridge, Suite 200

McLean, Va.

www.dcnewhorizons.com

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AITP Akron

June 25

Akron, Ohio

www.akron-aitp.org

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ISSA Inland Empire

June 25, 6:30 to 8:30 p.m.

Upland, Calif.

ie.issa.org

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AITP California Southland

June 26

Garden Grove, Calif.

www.aitpcalsouthland.org

ISSA Baltimore

June 26

Concurrent Technologies Corp.

8530 Corridor Road

Savage, Md.

www.issa-balt.org

JULY

AITP Wheeling

July 10

White Palace at Wheeling Park

1801 National Road, Wheeling, W.Va.

www.aitp-wheeling.org

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AITP Washington, D.C.

July 11

Alfio's La Trattorio Restaurant

4515 Willard Ave.

Chevy Chase, Md.

www.aitpdc.org

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Troubleshooting & Maintaining Cisco IP Networks

July 15

New Horizons Lexington

1050 Chinoe Road, Suite 208

Lexington, Ky.

www.nhlexington.com

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AITP Southwest Missouri

July 16

High Street Baptist Church

900 N. Eastgate Ave.

Springfield, Mo.

aitpspringfield.org/main.html

AFCOM Greater Tampa Bay Chapter Social Event

July 17, 12:30 to 4 p.m.

www.tampabayafcom.com

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AITP California Southland

July 24

Garden Grove, Calif.

www.aitpcalsouthland.org

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ISSA Inland Empire

July 30

11:30 a.m. to 1:30 p.m.

Upland, Calif.

ie.issa.org

AUGUST

AITP Washington, D.C.

Aug. 8

Alfio's La Trattorio Restaurant

4515 Willard Ave.

Chevy Chase, Md.

www.aitpdc.org

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SharePoint TechCon

Aug. 11-14

Boston, Mass.

www.bigdatatechcon.com

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Implementing Cisco IOS Network

Aug. 12

New Horizons Washington, D.C.

1331 F St. N.W., Suite 240

Washington, D.C.

www.dcnewhorizons.com

Upcoming IT Events

AITP Richmond

Aug. 13

Hilton Garden Inn at Innsbrook

4050 Cox Road

Glen Allen, Va.

www.aitprich.org

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AITP Wheeling

Aug. 14

White Palace at Wheeling Park

1801 National Road

Wheeling, W.Va.

www.aitp-wheeling.org

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AITP Twin City

Aug. 15, 7 p.m.

Ozark House Restaurant

704 McGregor St.

Bloomington, Ill.

www.aitp.org/members/group_content_view

.asp?group=75779&id=125369

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AITP Southwest Missouri

Aug. 20

High Street Baptist Church

900 N. Eastgate Ave.

Springfield, Mo.

aitpspringfield.org/main.html

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Cisco CCN Certification Training Course

Aug. 21

Institute of Professional Learning

500 W. Cypress Creek Road

Ft. Lauderdale, Fla.

www.iplearning.net

ISSA Inland Empire

Aug. 27, 11:30 a.m. to 1:30 p.m.

Upland, Calif.

ie.issa.org

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ISSA Baltimore

Aug. 28

Concurrent Technologies Corp.

8530 Corridor Road

Savage, Md.

www.issa-balt.org

SEPTEMBER

AITP Richmond

Sept. 10

Hilton Garden Inn at Innsbrook

4050 Cox Road

Glen Allen, Va.

www.aitprich.org

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AITP Wheeling

Sept. 11

White Palace at Wheeling Park

1801 National Road

Wheeling, W.Va.

www.aitp-wheeling.org

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AFCOM Potomac

Sept. 12

Augustine Golf Club

76 Monument Drive

Stafford, Va.

www.afcom.com

AITP Washington, D.C.

Sept. 12

Alfio's La Trattorio Restaurant

4515 Willard Ave.

Chevy Chase, Md.

www.aitpdc.org

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AITP Washington, D.C.

Sept. 12

Alfio's La Trattorio Restaurant

4515 Willard Ave.

Chevy Chase, Md.

www.aitpdc.org

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BICSI Fall Conference

Sept. 15-19

MGM Grand Hotel

3799 Las Vegas Blvd.

Las Vegas, Nev.

www.bicsi.org

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CompTIA Network Certification

Sept. 16

New Horizons Lexington

1050 Chinoe Road, Suite 208

Lexington, Ky.

www.nhlexington.com

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AFCOM Greater Tampa Bay Chapter

Sept. 18, 12:30 to 4 p.m.

www.tampabayafcom.com

Do you have an event you'd like to see listed?
Send an email to feedback@processor.com.

Processor
Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

To list your company and products, call (800) 247-4880.

PHYSICAL INFRASTRUCTURE

CORNING

Corning Cable Systems is a leading manufacturer of fiber optic communications solutions for voice, data and video network applications worldwide. We offer the broadest range of end-to-end connectivity solutions for customers' telecommunications networks. We put companies at the forefront of network innovation, pioneering many of the global products and solutions commonly used in state-of-the-art cabling systems.

Products Sold:
- Cabling

(607) 974-9000 I www.corning.com

PHYSICAL INFRASTRUCTURE

SIEMON

Headquartered in Connecticut, Siemon has been around since 1903 as a provider of high-quality cabling solutions designed to improve network connections, performance, and efficiency. The company manufactures end-to-end copper and fiber cabling systems, cabinets, racks and cable management solutions for data centers, and more. Siemon also has an R&D arm, Siemon Labs, which focuses heavily on innovation and shows the company's long-term commitment to its customers.

Products Sold:
- Cable management solutions
- Data center cabinets and racks
- End-to-end copper and fiber cabling
- High-speed interconnects
- Intelligent infrastructure management

(860) 945-4200 I www.siemon.com

PHYSICAL INFRASTRUCTURE

GEIST

Geist is a leading data center provider for power strips, monitoring equipment, cabinet containment & in-rack cooling, and DCiM systems. Geist's power strips are tailored to meet each client's needs and provide unbeatable performance in the data center. Our industry leading monitoring and cooling solutions increase data center efficiencies and make going green easier than ever before.

Products Sold:
- Power
- Cool
- Monitor
- Manage

(800) 432-3219 I www.geistglobal.com

PHYSICAL INFRASTRUCTURE

DATA AIRE INC.

Data Aire, Inc. has been designing and manufacturing precision cooling equipment for more than 40 years. We established some of today's industry standards, such as scroll compressors, steam generator humidifiers and microprocessor controllers. Our equipment can be found in any size organization or data center, from a closet to a Fortune 500 financial data center or government high security operation center. With our experience and expertise we can, and are willing, to design and build equipment to meet our customer's needs. With the shortest delivery times in the industry Data Aire can meet your requirements.

Products Available:
- Floor Mounted Units – CRAC or CRAH
- Ceiling Mounted Units
- Rack and Row Solutions
- Specialty Units
- Heat Exchangers
- System Controls

(800) 347-2473 I www.dataaire.com

PHYSICAL INFRASTRUCTURE

AUSTIN HUGHES

Founded in 1995, Austin Hughes Electronics Ltd is a design and manufacturing group that offers a broad range of solutions based around 19 inch rack mount technology. With a wealth of experience Austin Hughes design and development teams are focused to rapidly transform customer requirements and market trends into saleable solutions.

Products Sold:
- Infra solution Cabinet Smartcard Handels
- InfraPower Cabinet Intelligent PDUs
- CyberView Rackmount KVM & LCD Console Drawer
- Environmental Sensors

(510) 794-2888 I www.Austin-Hughes.com

PHYSICAL INFRASTRUCTURE

AmeriCool AIR CONDITIONING

AmeriCool, Inc. is the official sales, marketing, and distribution company for Weltem Air Conditioning products in North America. Our AmeriCool portable air conditioners are built to the highest standards in the industry and offer unbeatable performance, reliability and value. With products ranging from 1 to 5 tons we offer air conditioning solutions to companies small and large. Due to the wide operating range of our product, 24/7 cooling capability and rugged design, our product is a great solution for mission critical needs and harsh industrial applications.

Products Sold:
- Portable Air Conditioning Units

(800) 680-0725 I www.americoolinc.com

PHYSICAL INFRASTRUCTURE

hergo TECHNICAL WORKSPACE SOLUTIONS

Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

Products Sold:
- Racks
- Enclosures/cabinets
- Motorized workstations
- Flat-panel arms
- Computer desks
- Cable management
- Power management

(888) 222-7270 I www.hergo.com

PHYSICAL INFRASTRUCTURE

CE COMM DATA CENTER PRODUCTS & SERVICES

C.E. Communication Services (CE COMM) distributes, markets, designs, and manufactures Data Center products, specializing in Network Infrastructure, Cable and Wire Management, and Fiber and Copper Cabling.

Products Sold:
- Patented Cable Management Systems for CISCO Catalyst and all 1U Switches
- Standard & Custom Data Center Cable Assemblies: Copper CAT5E, CAT6 & 6A
- High Density Optical Fiber Assemblies
- Fiber Connectivity, Fiber Test - Inspection and Media Conversion Equipment

(866) 966-1555 I www.cecommunication.com

PHYSICAL INFRASTRUCTURE

HM CRAGG Quality People. Quality Power.

As an integrator and master distributor providing quality power solutions, HM Cragg has built a reputation as the company that delivers innovation to aid and satisfy its customers. HM Cragg was founded in 1968 and is 100% employee-owned, focusing on quality people and exceptional products.

Products Sold:
- AC and DC power solutions (UPSes, power distribution)
- Control and monitoring (environmental and power)
- Connectors and cables (cord sets, ePDU cables)
- Cooling (air flow management, portable cooling)
- Racks and enclosures (standard racks, battery racks)
- Safety equipment (spill containment, safety signs)

(800) 672-7244 I www.hmcragg.com

PHYSICAL INFRASTRUCTURE

CABLESYS

Cablesys, headquartered in La Mirada, California, is a leading manufacturer of high performance fiber cables, fiber jumpers, CAT 6 patch cords, CAT 5e patch cords, CAT 6 cables and connectivity solutions. We have millions in stock that can be shipped same day and best of all, 20% less than name brands.

Products Sold:
- Fiber Optic Cables
- Fiber Patch Cords
- Networking Patch Cords
- Telephone Line Cords
- Audio and Video Cables
- Mini Coax Cables

Custom Cable Assemblies:
- Pre-bundled Cable Assemblies
- Trunk Cable Assemblies
- Multi-strand Cable Assemblies
- Pre-labeled and Pre-kitting
- OEM Cable Assemblies

(800) 555-7176 I Cablesys.com/pro

PHYSICAL INFRASTRUCTURE

BayTech

BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

Products Sold:
- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 I www.baytech.net

PHYSICAL INFRASTRUCTURE

ITWatchDogs

ITWatchDogs manufactures environmental monitors that help prevent downtime from climate- and power-related issues. Its Web-enabled monitors let users keep an eye on remote conditions from a secure Web interface and receive SNMP, email, SMS and voice call alerts when specified alarm thresholds are exceeded for external factors, including temperature, humidity, airflow, power failure, smoke, water detection, and more.

Products Sold:
- Climate monitors
- Power monitors
- Digital and analog sensors
- IP surveillance cameras

(512) 257-1462 | sales@itwatchdogs.com | www.itwatchdogs.com

PHYSICAL INFRASTRUCTURE

AVTECH

AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

Products Sold:
A full range of products that monitor the IT and facilities environment, including temperature, humidity, power, flood, room entry, and UPS

(888) 220-6700 | www.AVTECH.com

PHYSICAL INFRASTRUCTURE

PDUs direct

PDUsDirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDUs Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

Products Sold:
A complete line of metered and basic PDUs, and 20A switched PDUs.

(888) 751-7387 | pdusdirect.com

NETWORKING & VPN

METRIC SYSTEMS CORPORATION

Metric Systems Corporation® designs and manufactures broadband wireless networking equipment, and end-to-end solutions for government and industry. We've been in the business of manufacturing and integrating reliable industrial-grade wireless networking systems for over 25 years. Our networks are deployed around the world protecting and supporting people and machines. Our specialty is working with your unique requirements and existing infrastructure to provide a networking solution that fits your requirements, schedule, and budget.

Products Sold:
Rhino Box® Environmentally Controlled Equipment Shelters and SAFARI™ Wireless Controllers and Radio Systems.

(800) 549-7421 | www.metricsystems.com

NETWORKING & VPN

Interface Masters TECHNOLOGIES
Innovative Network Solutions

Interface Masters Technologies is a leading vendor in network monitoring and high-speed networking. Based in the heart of the Silicon Valley, Interface Masters' expertise is in Gigabit, 10 Gigabit, and 40 Gigabit Ethernet network access and network connectivity solutions that integrate with monitoring systems, inline networking appliances, IPS, UTM, load balancing, WAN acceleration, and other mission-critical IT and security appliances.

Products Sold:
- Hardware load balancers
- Specialized 10GbE internal server adapter cards
- Bypass and failover systems

(408) 441-9341 | www.interfacemasters.com

SERVERS

CHENBRO

Chenbro is a leader in enclosure solutions, selling its products primarily to system integrators and OEM and channel partners. The company's extensive research and development efforts help it to keep its competitive edge and maintain market leadership, with special focus on thermal, EMI, and acoustic solutions. Taiwan-based Chenbro has offices in the United States, UK, The Netherlands, and China.

Products Sold:
- A comprehensive line of PC chassis, server/workstation chassis, rackmount chassis, and HDD enclosures.

(909) 947-3200 | www.chenbro.com

SERVERS

SUPERMICRO®

Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology, is a premier provider of advanced server Building Block Solutions® for enterprise IT, data center, cloud computing, HPC, and embedded systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative by providing customers with the most energy-efficient, environmentally-friendly solutions available on the market.

Products Sold:
- Servers
- Motherboards
- Chassis
- Network switches
- Storage solutions
- Blade servers
- GPU servers
- Embedded

(408) 503-8000 | www.supermicro.com

SERVERS

SERVERmonkey.com

ServerMonkey stocks and delivers new and refurbished servers and networking equipment. Our blend of low prices, high quality and exceptional service offers a unique opportunity for corporate IT groups to economize without compromising.

Products Sold:
- Dell, HP, and other Servers
- Workstations
- Storage
- Processors
- Server Accessories

(713) 430-2182 | www.servermonkey.com

CLIENTS

dtSearch®
www.dtsearch.com

The Smart Choice for Text Retrieval® since 1991, dtSearch® offers over 21 years of experience in parsing and searching data. The dtSearch product line includes enterprise and developer text search products, meeting some of the largest-capacity text retrieval needs in the world. dtSearch's website offers hundreds of developer case studies and press reviews. The company has distributors worldwide, including coverage in six continents.

Products Licensed:
Text retrieval products, including:
- Desktop with Spider
- Network with Spider
- Publish (for portable media)
- Web with Spider
- Engine for Win & .NET
- Engine for Linux

(800) IT-FINDS | www.dtsearch.com

SERVICES

FMI Recycling

FMI Recycling has been a leader in environmental responsibility for more than 28 years. They specialize in recycling end-of-life products, electronic equipment, scrap metals, and all types of industrial equipment. They pride themselves on their tradition of excellent customer service, knowledge and expertise, logistics capabilities, and community involvement and support.

We Process and Buy:
- Computers, Hard Drives, Memory, Laptops, IC's, Chips Boards, Cellular Phone, Telephones, Cables, Accessories
- Main Frames, Printers, Drives, Telecom, Manufacturing, all types of scrap metal

(214) 747-6525 | www.fmirecycling.com | sales@fmirecycling.com

SERVICES

Gillaspy™

Gillaspy Associates with our partners provide over 3 decades of Data Center Design, Consulting and Construction experience. Whether looking to Consolidate, Renovate, Build New, Implement Containers or Pods, Outsource to the Cloud, Look at a Hybrid Approach, Implement Wi-Fi and/or BYOD, Evaluating Server, Switch, Firewall, IPS/IDS, and Storage requirements, Install Copper and/or Fiber Optic Cabling/Patch Panels, Provide and Install Equipment Racks/Cabinets, address Fire Suppression Needs and more, Gillaspy Associates is your Optimal Partner and we look forward to speaking with you. **Please contact us today to schedule a FREE 1 hour consultation at 805-386-1166 or email us at: info@gillaspysales.com.**

(805) 386-1166 | www.info@gillaspysales.com